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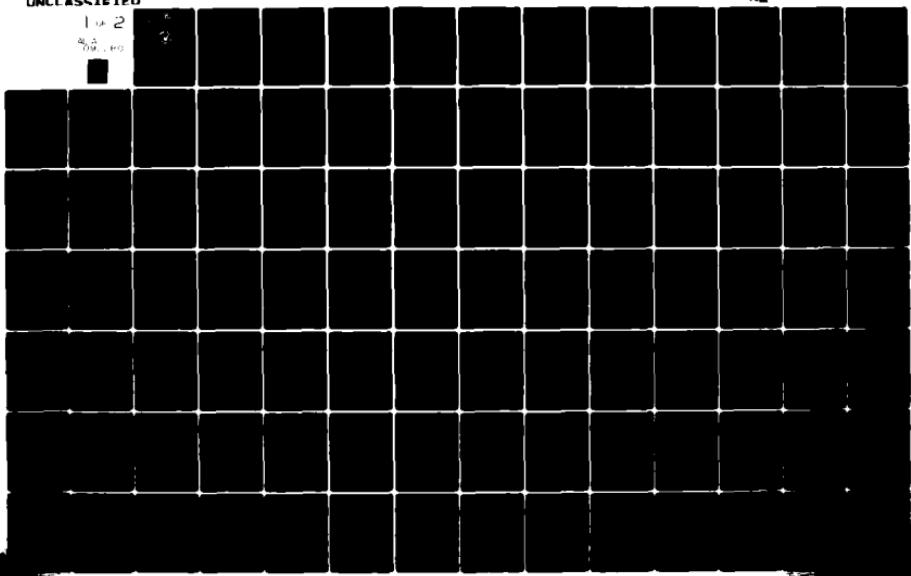
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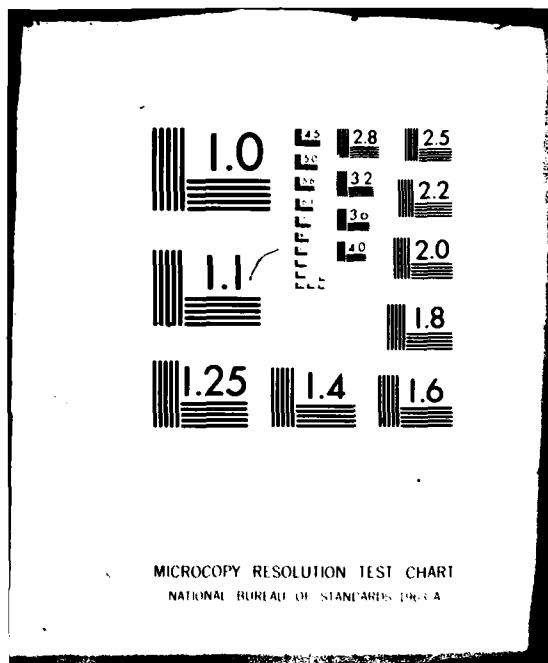
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THESIS

RTC CREDO: INITIAL ASSESSMENT

by

Stephen G. Hawkins

June 1980

Thesis Advisor:

R. S. Elster

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RTC CREDO: INITIAL ASSESSMENT

by

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Lieutenant Commander, United States Navy
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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

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ABSTRACT

A statistical analysis was conducted to initially assess the effectiveness of the experimental program, RTC CREDO, to counter first-term enlisted attrition in the Navy.

Cross-tabulation, discriminant, and multiple regression analyses were performed to examine various experimental and control groupings and their observed attrition.

The results of this study were tentative and inconclusive because of the recency of the experiment. Indications for future research were made, which, with the passage of time and accumulation of more data, will enable fuller and more comprehensive studies of the effectiveness of RTC CREDO to be made.

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I. INTRODUCTION

A. PROBLEM

A high level of first-term attrition has been a consistent problem facing the U.S. Navy in recent years. These levels of attrition are depicted in Table I, and represent the total attrition (male only) experienced in the first five years of service for each fiscal year's enlistment cohort since the beginning of the AVF. Also included in Table I is attrition attributable to failure to meet minimum behavioral or performance criteria as indicated by the Interservice Separation Code entries.¹

With the exception of 1974, the data in Table I show a gradual trend of decreased attrition. However, for those years for which 48 month data are available, attrition for the first 12 months of service increases from 42 to 51 percent of the total attrition. The greatest loss experienced from each cohort during the 48 month enlistment period occurs during the first three months of service, the virtual entirety of which is devoted to recruit training and apprentice/technical training. This loss represents from 20 to 27 percent of the total attrition for the 1973 to 1976 cohorts. The magnitude of this loss may be inflated and the a degree self-inflicted.

¹ See Appendix A for ISC Listing.

		Length of Service (Months)							
		0-3	4-6	7-12	13-18	19-24	25-30	31-36	37-48
1973 Total	7.41	9.52	15.62	21.71	26.88	30.91	34.06	36.99	
	ISC 6-8	4.70	6.27	11.20	16.38	20.69	23.99	26.42	28.46
1974 Total	11.22	13.16	18.67	25.09	30.51	34.58	37.71	40.98	
	ISC 6-8	7.22	8.72	13.35	18.95	23.61	27.01	29.54	31.82
1975 Total	9.99	12.41	17.65	23.64	28.93	32.76	35.25	37.73	
	ISC 6-8	6.76	9.21	13.61	18.78	23.26	26.33	28.18	29.77
1976 Total	8.90	11.33	16.81	22.23	26.38	29.26	31.24	33.17	
	ISC 6-8	5.63	7.60	12.07	16.63	19.92	22.09	23.44	24.61
1977 Total	12.37	14.20	17.77	21.14	24.09	25.66	26.05	---	
	ISC 6-8	8.87	10.20	12.82	15.33	17.58	18.75	19.05	---
1978 Total	10.18	11.45	15.12	16.44	16.82	---	---	---	
	ISC 6-8	9.14	10.11	11.60	12.88	13.18	---	---	---
1979 Total	8.80	9.36	9.88	---	---	---	---	---	
	ISC 6-8	6.17	6.57	6.97	---	---	---	---	---

TABLE I
NAVY MALE NPS CUMULATIVE PERCENT ATTRITION BY FISCAL YEAR

SOURCE: DMOC Cohort File, Current as of Sept. 30, 1979.

Note: Total is total attrition for all reasons; ISC 6-8 stands for Interservice Separation Codes representing losses due to failure to meet minimal acceptable behavioral or performance criteria.

It has been suggested that some recruits labeled as unsuitable because of motivational or behavioral problems may have been separated from service unnecessarily [Plag, 1963]. The Navy may be depriving itself of competent manpower under the rationale of separating marginal performers is easily as possible.

The failure to meet minimum behavioral or performance criteria accounts for the majority of all Navy enlisted attrition. With few exceptions, attrition rates for these causes follow the same patterns over time as do total attrition rates.

Although the trends show attrition to be decreasing, the problem of first-term attrition continues to deserve high-level attention. It was estimated in 1976 that the annual cost of DOD first-term attrition was approximately one billion dollars [Defense Manpower Commission, 1976]. The task of reducing the amount of lost dollars as well as lost manpower is multifaceted.

The identification of personnel having a high risk of attrition prior to service entry has been addressed. Lockman [1976], for instance, has used variables such as education level, mental ability, age, race, and number of dependents to predict enlisted attrition from the Navy. Other research has shown that motivational and behavioral factors are prime causes of attrition [Martin, 1977; Jenkins, 1977]. Additional psychological testing techniques have been advanced as means

to identify potential attrites in recruit training as early as the first day [Spielberger and Barker, 1979].

The use of realistic job preview (RJP) films as a method to facilitate the socialization processes of new recruits has been shown to be promising in reducing attrition [Horner, Mobley, and Meglino, 1979; Mogley, Griffith, Hand, and Meglino, 1979]. For those individuals who have displayed maladaptive personality traits and/or sub-satisfactory performance, interventions have been established to prevent their attrition.

One such effort is the Behavioral Skills Training Program (BEST) which was established at Naval Amphibious Base Little Creek, Virginia, in July 1979. This program was designed specifically for individuals who have displayed marginal performance and disciplinary problems. The BEST program stresses military discipline and intense physical conditioning. Personnel to attend BEST training are designated by their commanding officers. The four week BEST program strives to instill a sense of goal achievement in each attendee in order to make him a more productive service member when he returns to his unit. Preliminary reports of BEST's effectiveness have been encouraging.² A more extensive evaluation of this program is currently being done by the Naval Personnel Research and Development Center, San Diego, California.

² From personal Communication with CDR George Anastasi, OP-135K,

Another counter-attrition program in the Navy involves the Chaplains Religious Enrichment and Development Operation (CREDO). CREDO was initially established in 1971 in San Diego as a special chaplain staffed approach to the Navy's Drug Rehabilitation Program. Since then it has broadened its scope to include naval personnel and dependents with various problems, marginal performers, and disciplinary offenders. CREDO is a spiritually based program intended to promote personal growth and maturity. An informal survey in 1978 showed that CREDO was thought to be effective in assisting fleet personnel to manage their emotional, attitudinal, and situational problems. Survey respondents also indicated the CREDO experience reduced the likelihood of premature separation from the Navy. CREDO is staffed by Navy chaplains, and comes under the auspices of the Office of the Chief of Navy Chaplains (OP-01H).

B. PURPOSE

This thesis is the initial assessment of the impact on first-term enlisted attrition of RTC CREDO, and experimental program established by the Office of the Chief of Navy Chaplains (OP-01H) at Recruit Training Center, Great Lakes, Illinois.

RTC CREDO is an extension of the existing CREDO program and is intended to offer assistance toward personal growth and spiritual development. As in the parent CREDO, the focus of RTC CREDO is on the individual; on his emotional, attitudinal

and situational adjustment. For the Navy, success of RTC CREDO should be reflected in decreased behavioral and marginal performance problems, and, consequently, decreased first-term enlisted attrition. The evaluation of RTC CREDO will focus on its impact on attrition of first-term enlisted personnel.

RTC CREDO initiated its program in May, 1979, and continued through March, 1980. The 14 workshops of the RTC CREDO were intended to offer spiritual and motivational assistance as a means toward personal growth enhancement. This thesis will not, however, evaluate the composition or structure of RTC CREDO's internal workshop format.³ This thesis will describe the:

- selection process by which RTC CREDO experimental and control subjects were designated
- sources from which the subjects were obtained within the Recruit Training Center
- screening of the data from the RTC CREDO population
- experimental and control samples
- preliminary data analyses
- findings concerning attrition to date.

³ A typical format of an RTC CREDO workshop is offered in Appendix B.

II. EXPERIMENTAL DESIGN

A. SUBJECT SOURCES AND SELECTION PROCESSES

1. Apprentice Training Division

At its inception, RTC CREDO was to use exclusively recruit personnel who had satisfactorily completed the eight week basic military training curriculum and who were subsequently assigned to the Apprentice Training Division (ATD). Apprentice training is required for all those personnel not assigned to technical school training. These individuals are referred to as General Detail (GenDet) personnel. For the first nine RTC CREDO workshops, experimental subjects were selected using subjective and judgmental criteria. Responsibility for selecting ATD personnel for RTC CREDO was given to a Senior Chief Petty Officer who, on the basis of reviewing the Recruit Training Records (also known as "hard cards")⁴ of personnel entering ATD, would select those he felt were most in need of RTC CREDO attention. Specifically, the Recruit Performance Data and Discipline/remediation sections of the hard card were reviewed. If these sections of the hard card showed marginal performance or minor disciplinary problems for an individual, he was selected for attendance at a RTC CREDO workshop. Academic performance was not considered in

⁴ A sample "hard card" is found in Appendix C.

the selections. For the last five workshops, the procedure for selecting ATD attendees was entirely random from the men available at the time a RTC workshop was scheduled.

The procedures for the selection of appropriate control group personnel were not uniform throughout the RTC CREDO program. Retrospective selection of control for six of the first nine workshops was made in October, 1979, by the same Senior Chief Petty Officer who had selected the experimental subjects (the reasons for omission of control group selection prior to this time will not be addressed in this thesis). Without appropriate controls, however, analysis of results of six of the first nine workshops would be inconclusive. With appropriately selected experimental and control groups, causal statements can be made concerning the impact of the RTC CREDO on attrition.

To obtain control groups, the Senior Chief reviewed past ATD records. To select a control group for the RTC CREDO workshop held in July 1979, for example, the records of recruit graduates who entered ATD in July 1979 were reviewed using the same performance and disciplinary criteria which had been used to select the experimental group. Control groups for three of the first nine workshops were not selected because appropriate personnel could not be identified (The experimental groups corresponding to these groups were also dropped.) The selection procedure of individuals for control groups for the last five workshops was entirely random.

The names and social security numbers of all ATD-RTC CREDO personnel were submitted on individual ATD data sheets. The data sheets provided the primary documentation for experimental and control personnel. An example of the ATD data sheet is provided in Appendix D.

2. Positive Motivation Unit

The Positive Motivation Unit (PMU) provided inputs to RTC CREDO only for the last five workshops. PMU personnel are recruits still undergoing basic recruit training who have displayed performance and disciplinary deficiencies of such magnitude that they require special remedial attention. The PMU program stresses military discipline and physical fitness. Counseling by Human Resource Management personnel is provided. If a recruit does not successfully complete the PMU program, he is processed for discharge from the Navy. If he does successfully complete PMU, he is returned to basic training. If he fails again to meet minimum performance and disciplinary standards, he is processed for discharge from the Navy.

The PMU was charged with providing an unscreened list of twelve PMU recruits for each RTC CREDO workshop. Individuals were then to be randomly selected into either the experimental or control group by RTC CREDO staff personnel. Doubt has been raised by the RTC CREDO staff concerning the appropriateness of certain PMU personnel assigned to RTC CREDO for selection. This issue cannot be fully addressed in this thesis. It would not be appropriate here to judge whether the PMU

staff followed the spirit, intent, and letter of their instructions regarding personnel selection for RTC CREDO. It is sufficient to say that two PMU recruits were offered to RTC CREDO who were awaiting Recruit Evaluation Board (REB) action and discharge from the service. This was not known prior to the conduct of the workshop in which they participated. The doubt that persists is whether other PMU-RTC CREDO personnel were in a similar status. If so, RTC CREDO attrition results from the PMU group are biased.

B. DATA SCREENING

Of the 638 ATD and PMU personnel for whom data were submitted for analysis, the records of 552 were used. The data from the first three RTC CREDO workshops, consisting of a total of 80 people, were not used in the analysis because appropriate control groups could not be established.

Six PMU personnel were dropped from the sample. Four were experimental subjects in workshop six for whom no control subjects were available. The other two individuals (workshop 11) were those mentioned earlier who were awaiting REB action and discharge prior to attending the CREDO workshop.

Table II displays the composition of the entire sample by ATD/PMU and Experimental/Control divisions and by individual RTC CREDO workshops.⁵

⁵ Workshops were renumbered commencing with the fourth workshop conducted. All workshop numbers referenced in the text follow this convention. Workshops originally numbered 1-3 were dropped, as explained above, because no control group personnel were available.

SOURCE:

WORK SHOP NUMBER	EXPERIMENTAL		CONTROL		Workshop dates
	ATC	PMU	ATC	PMU	
1 ^a	13	-	11	-	9-12 July 1979
2	23	-	19	-	26-29 July 1979
3	8	-	6	-	2-5 Aug. 1979
4	30	-	30	-	20-23 Aug. 1979
5	29	-	30	-	24-27 Sept. 1979
6	25	-	25	-	15-18 Oct. 1979
7 ^b	24	-	24	6	26-29 Nov. 1979
8	25	6	25	6	17-20 Dec. 1979
9	25	6	25	6	14-17 Jan. 1980
10	25	6	25	6	25-28 Feb. 1980
11	24	4	24	6	10-13 March 1980
ATD/PMU Ns	251	28	243	30	
Experimental/ Control Ns	279		273		
Grand Total N		552			

TABLE II
INITIAL RTC CREDO PERSONNEL DISTRIBUTION AT
GREAT LAKES

^aWorkshops 1-6 ATD personnel selected via personal record review.
^bWorkshops 7-11 ATD personnel selected randomly.

For tracking of the experimental and control personnel, Defense Manpower Data Center (DMDC) monthly submission files were used. Initially, the DMDC cohort file was to be used, but it was found to be inappropriate for this thesis. Since the cohort file is compiled at the end of each fiscal year, personnel attending RTC CREDO workshops 7-11 would not have been recorded on the file as they had not entered the service prior to the completion of FY 79 (30 Sep 1979). The DMDC submission file, which is compiled monthly, was considered to be more appropriate. The most current submission file available was that of March, 1980, so it was potentially possible to track all 552 RTC CREDO personnel. However, of the 552 total, 28 personnel were not located in the DMDC files. This represents a loss of five percent of the total sample, and can probably be attributed to administrative inconsistencies in compiling data for submission to DMDC. Table III displays the final distribution of ATD/PMU and experimental/control personnel for RTC CREDO.

SOURCE:

WORKSHOP NUMBER	EXPERIMENTAL		CONTROL		Workshop dates
	ATC	PMU	ATC	PMU	
1	12(1)*	-	11	-	9-12 July 1979
2	22(1)	-	19	-	26-29 July 1979
3	8	-	6	-	2-5 Aug. 1979
4	28(2)	-	29(1)	-	20-23 Aug. 1979
5	28(1)	-	30	-	24-27 Sept. 1979
6	25	-	24(1)	-	15-18 Oct. 1979
7	23(1)	5(1)	24	6	26-29 Nov. 1979
8	25	6	20(5)	5(1)	17-20 Dec. 1979
9	23(2)	4(2)	25	6	14-17 Jan. 1980
10	22(3)	6	23(1)	4(2)	25-28 Feb. 1980
11	22(2)	4	23(1)	6	10-13 March 1980
ATD/PMU Ns					
	238(13)	25(3)	234(9)	27(3)	
Experimental/ Control Ns					
	263(16)		261(12)		
Grand Total Ns					
	524(28)				

*(N) indicates missing cases

TABLE III
FINAL RTC CREDO PERSONNEL DISTRIBUTION

III. PROCEDURES AND RESULTS

A. PROCEDURES

Examination of the data was performed using SPSS programs. Frequencies, cross-tabulations, discriminant analyses, and multiple regression analyses were conducted using the following seven variables:

- HYEC - Highest Year of Education Completed
- PERC - AFQT Percentile Score
- AGEE - Age Upon Service Entry
- Marital Status
- NDEP/DEP - Absence/Presence of Dependents
- Regular or Reserve Status
- White/Non-white - Ethnic Grouping

A flow chart diagramming the cross-tabulation analyses is presented in Figure 1.

Descriptive statistics for each RTC CREDO workshop are presented in Appendix E. Each workshop may be considered as providing a separate cohort for future analysis, but for this thesis the recency of the experiment precludes examination of the data at that level of disaggregation. The data have been considered for analytical purposes as coming from one cohort, although nine months separate the first and last workshops under study. The only separation of the data into subsets using time is the distinction between "early" and "late" groups.

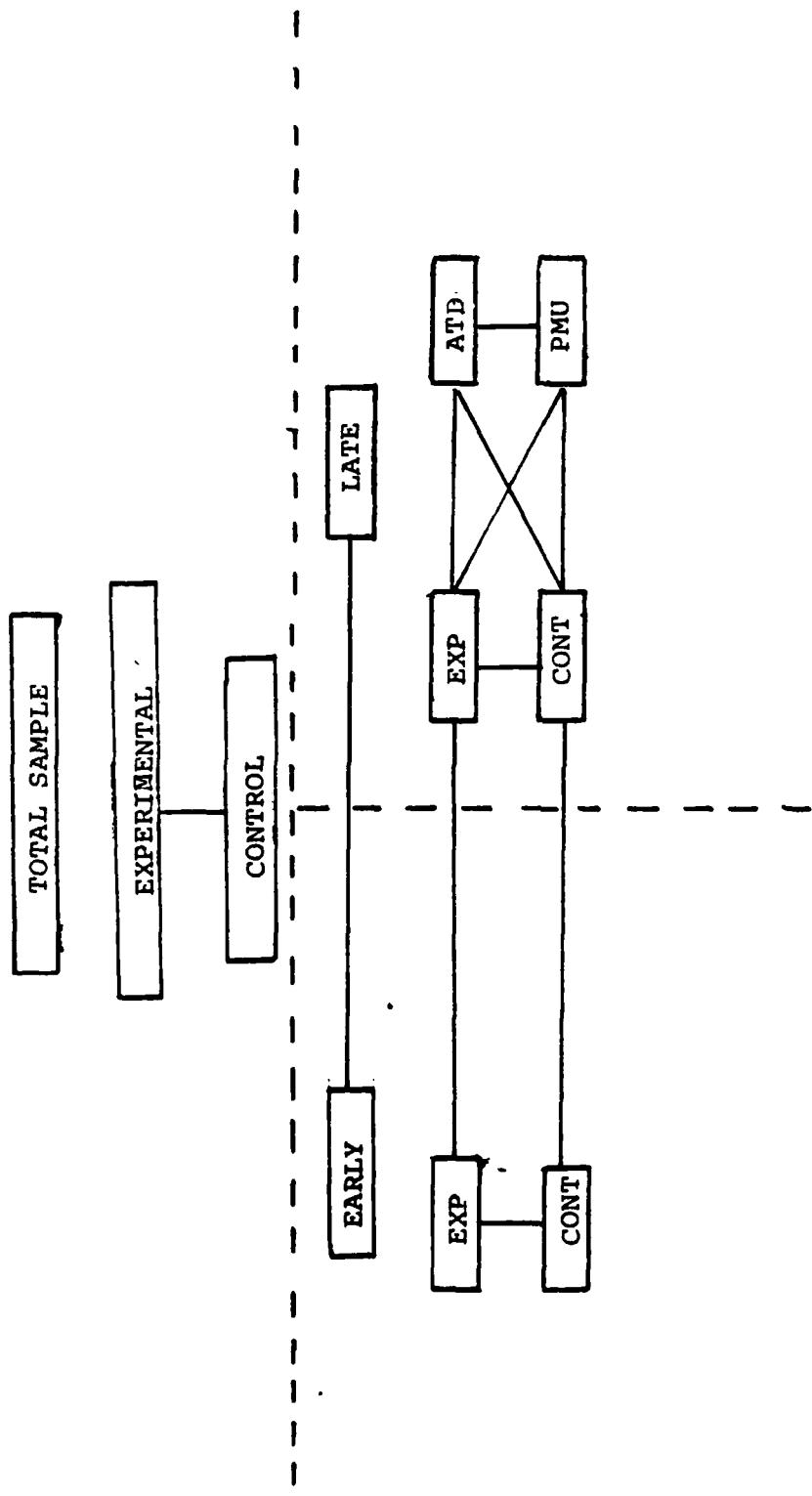


FIGURE 1. Experimental Design Analyses for RTC CREDO

The early group corresponds to RTC CREDO workshops one through six and the late group includes workshops seven through eleven. This distinction reflects the two methods of selection used for RTC CREDO assignment. The early workshops were selected through subjective review of Recruit Data Records (the hard card) and the late workshops were selected randomly from all recruits entering the ATD at the appropriate time. The PMU inputs to RTC CREDO all fell within the late group of workshops.

Only group descriptions and comparisons central to the evaluation of RTC CREDO are reported in this chapter of this thesis. The descriptions and comparisons included in this chapter describe the experimental RTC CREDO subjects and their control counterparts from both the ATD and PMU. These groups are also contrasted with one another in this chapter. Late subjects are compared to early subjects in order to determine any significant difference between the two groups resulting from the different procedures used in their selection. The comparisons presented in this chapter will help to determine the feasibility and type of analyses that can be used to evaluate the effects of RTC CREDO.

Group descriptions and comparisons that are not central to the evaluation of RTC CREDO are presented in Appendix F. The analyses shown in Appendix F allow comparisons to be made, for instance, between subjects from the ATD and the PMU.

To assist the reader, the results of the comparisions provided in Appendix F are included in the summary of the results of all analyses given in Table XVI of this chapter.

B. DESCRIPTIVE RESULTS

The means and distributions of the previously mentioned demographic variables for the entire RTC CREDO sample are given in Table IV. For highest year of education completed (HYEC) the mode is 12 years of education. Nearly 74 percent of the total cases found had 12 years of education. Only one person had more than this amount.

The reduced sample size for the AFQT percentile score variable (PERC) reflects the number of cases for which that variable had not been recorded on the DMDC submission file. The missing data might be due to the presence of prior service personnel in the sample because ASVAB scores are not recorded for these personnel when they enlist for a second time. This cannot be verified, however, because the DMDC submission file does not have an entry for prior service status. The age range of the sample supports the belief that some prior service veterans may indeed be included. This inference is reinforced by the finding that 14 people had from 25 to 106 months of active duty service recorded on their records as of the March 1980 submission file date.

The range for the number of dependents is given in Table IV. For presentation purposes, the figures do not differentiate

<u>VARIABLE</u> ¹	<u>MEAN</u>	<u>N</u>	<u>MODE</u>	<u>RANGE</u>
HYEC	11.485	524	12	8-14
PERC	47.472	517	--	---
AGEE	18.767	524	18	16-29

DISTRIBUTION

Single/Married	507/17	524	---
NDEP/DEP	502/22	524	0-2
Regular/Reserve	370/154	524	---
White/Nonwhite	369/154	523	---

¹HYEC = Highest Year of Education Completed

PERC = ATQT Percentile Score

AGEE = Age at Service Entry

NDEP/DEP = No Dependents/dependents

TABLE IV
DEMOGRAPHIC DESCRIPTION OF THE TOTAL SAMPLE

between individuals claiming one or two dependents. Several times during the presentation of the statistics, a discrepancy will be noted between the marital status and dependent status distributions. Whether this discrepancy is the result of administrative inconsistencies or single personnel claiming to have dependents is unknown.

For purposes of analysis, the race variable was condensed from a four value variable (white, black, other) into a two value variable. Of the 154 personnel reported as non-white, only six declared themselves as "other."

1. Aggregated Experimental vs. Aggregated Control

Figure 2 depicts the first step in the group comparison analysis. The results are shown in Table V. There are no statistically significant differences (no chi-square with probabilities $\leq .05$) between the aggregated experimental and control groups.

A discriminant analysis was performed comparing the aggregated experimental and control groups. The results are shown in Table VI and Figure 3. These results corroborate and supplement the cross-tabulation results shown in Table V. Whereas comparisons of individual variables do not show statistically significant differences between the experimental and control groups, the discriminant analysis shows a statistically significant difference between the two groups when the variables are considered simultaneously.

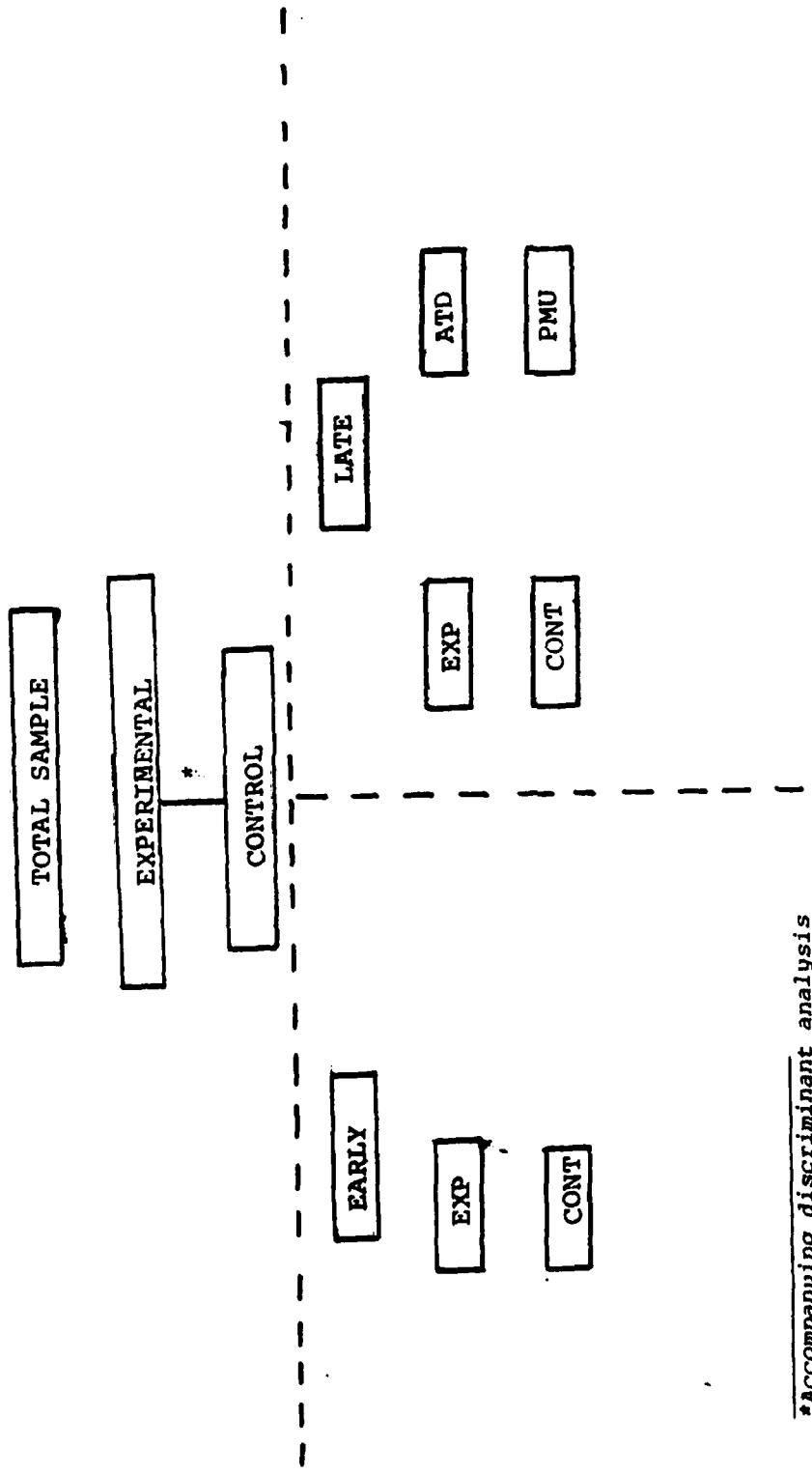


FIGURE 2. Experimental Design Analysis:
Aggregated Experimental vs. Control Groups

<u>Variable</u>	<u>EXP</u>	<u>CONT</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_C</u>
HYEC	11.56	11.41	.3181	263	261
PERC	45.74	49.58	.1006	258	259
AGEE	18.81	18.73	.6088	263	261
Single/Married	252/11	253/8	.4692	263	261
NDEP/DEP	252/11	251/10	.9119	263	261
Regular/Reserve	189/74	183/78	.6600	263	261
White/Nonwhite	189/74	180/80	.8003	263	260

TABLE V
AGGREGATE MEANS AND DISTRIBUTIONS FOR EXPERIMENTAL AND CONTROL GROUPS

FUNCTION	EIGENVALUE	PERCENT OF VARIANCE	CUMULATIVE PERCENT	CANONICAL CORRELATION
1*	0.02863	100.00	100.00	0.1668310

AFTER
 FUNCTION WILKS' LAMDA CHI-SQUARE D.F. SIGNIFICANCE

C	0.9721674	14.438	7	0.0439
---	-----------	--------	---	--------

WILKS' LAMDA (L-STATISTIC) AND UNIVARIATE F-RATIO
 WITH 1 AND 515 DEGREES OF FREEDOM

VARIABLE	WILKS' LAMDA	F	SIGNIFICANCE
HYEC	0.99532	2.418	0.1205
PERC	0.98558	1.534	0.0063
DRACE	0.99791	1.671	0.3213
DMS	0.99892	1.5579	0.4554
DComp	0.99975	0.1275	0.7212
OSP	0.99997	0.1651	0.8678
AGE	0.99942	0.2881	0.5853

CLASSIFICATION RESULTS -

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP		
		1	2	
GRCLF	1 (exp)	258	137 52.1%	121 46.9%
GROUP	2 (cont)	259	115 44.4%	144 55.6%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 54.35%

- a. DRace -- White=1 Non-white=0
- b. DMS -- Single=1 Married=0
- c. DComp -- Regular=1 Reserve=0

Table VI

Discriminant analysis results for aggregated experimental vs. control groups.

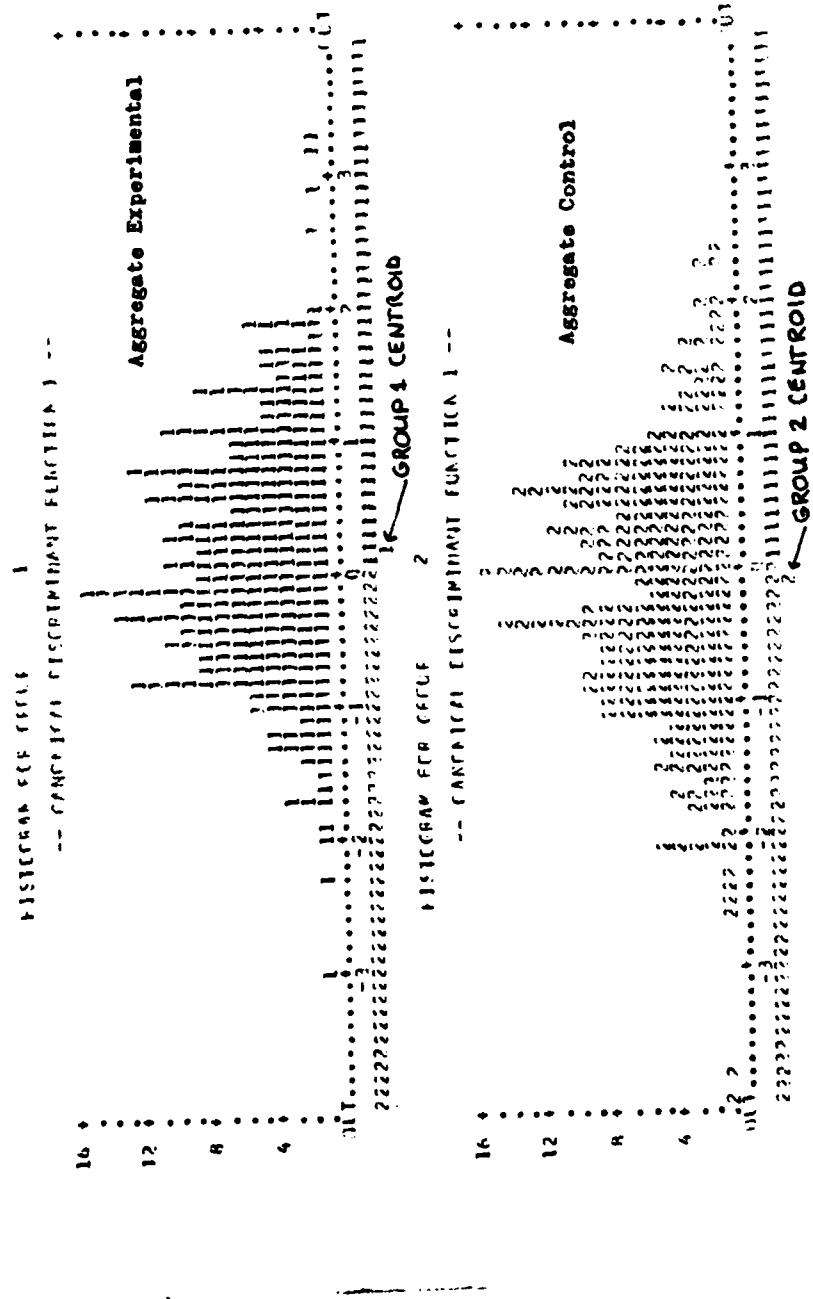


Figure 3. Disordiment analysis histograms for aggregated experimental vs. control groups.

The AFQT percentile score variable (PERC) is significant in the discriminant function, and is the nearest to statistical significance in the cross-tabulation analysis. Yet the function possesses little practical power to discriminate between the aggregated experimental and control groups as shown by the low eigenvalue and the percentage of known cases correctly classified (54.35 percent correctly classified using the function vs. 50 percent correct assignment by chance). The histograms in Figure 3 show the distributions of the aggregated experimental and control groups on the discriminant function.

2. Aggregated Early Group vs. Aggregated Late Group

The next analysis compared the entire sample when it was subdivided into early and late groups, as depicted in Figure 4. The results of this analysis are displayed in Table 7. There were no statistically significant differences between the two groups although education level (HYEC) and AFQT percentile score (PERC) differences are nearly significant.

The next series of analyses examined differences within the early and late groups.

3. Early Experimental vs. Early Control

This analysis compared experimental and control subjects within the early group. These subjects were all ATD personnel. This analysis is depicted in Figure 5. The results are displayed in Table VIII and reveal there were no significant differences between the experimental and control groups.

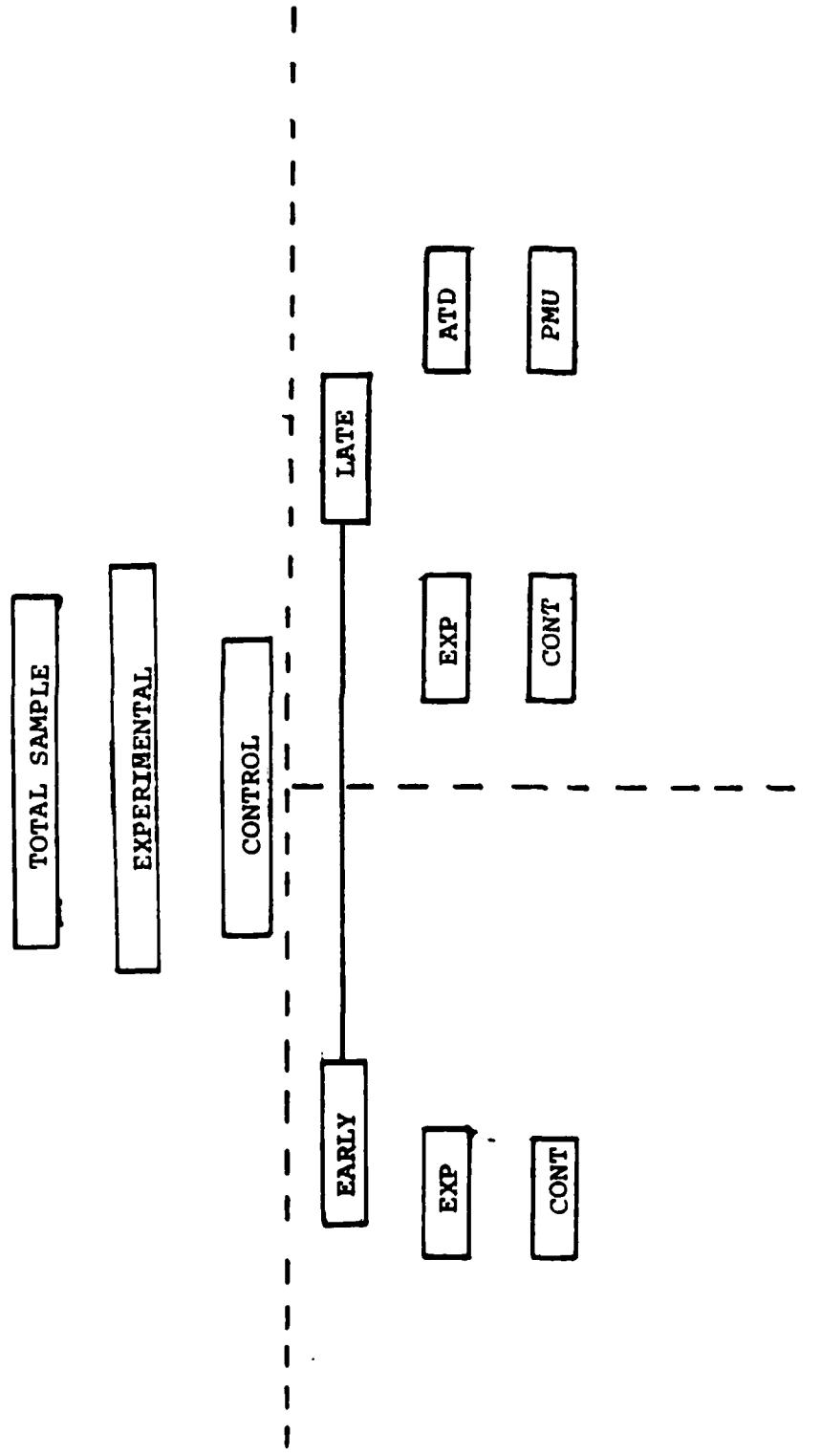
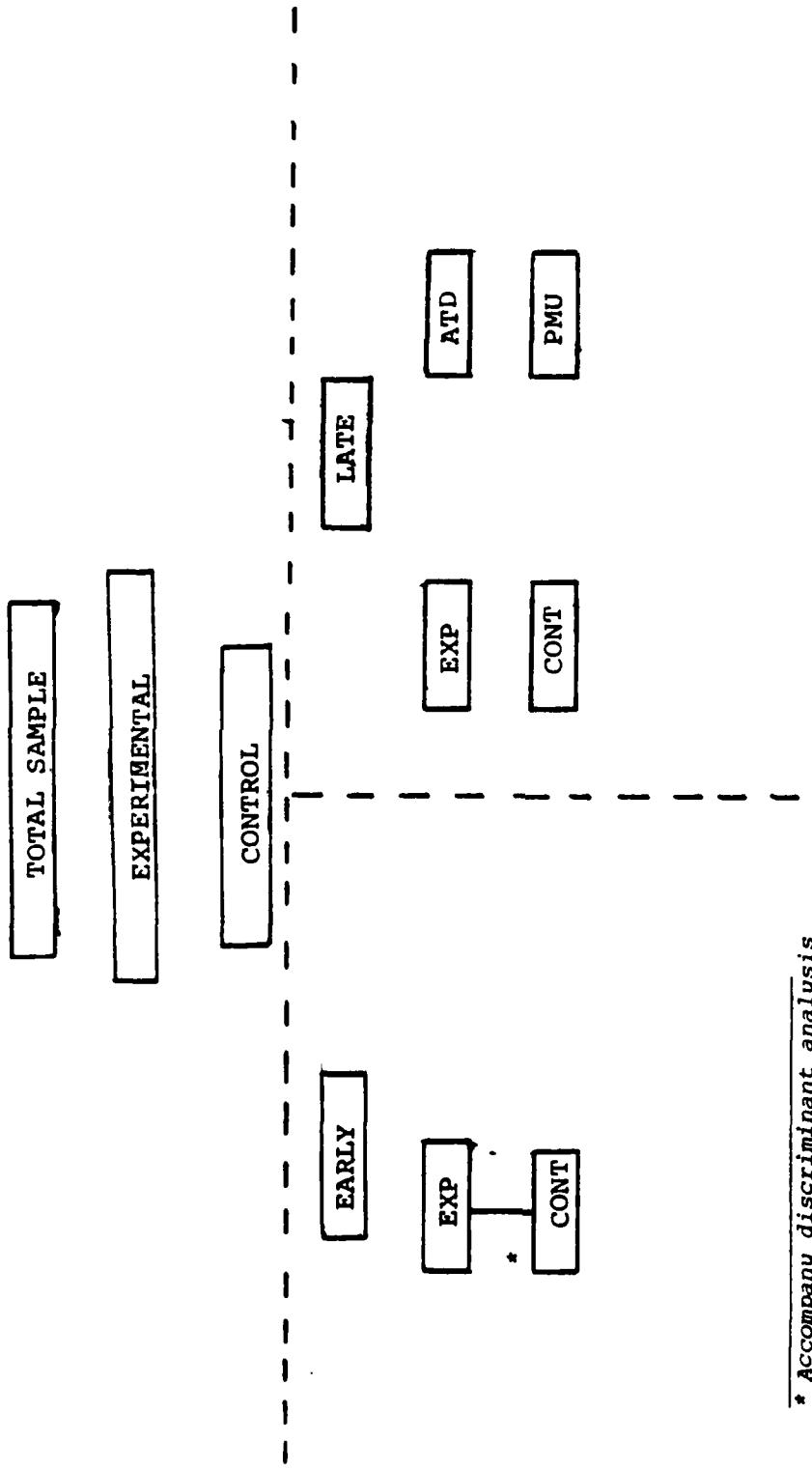


FIGURE 4. Experimental Design Analysis:
Early vs. Late Groups

<u>variable</u>	<u>Early</u>	<u>Late</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_L</u>
HYEC	11.63	11.36	.0501	242	282
PERC	45.33	49.67	.0596	239	278
AGEE	18.81	18.73	.1512	242	282
Single/Married	231/11	276/6	.1194	242	282
NDEP/DEP	229/13	273/9	.7824	242	282
Regular/Reserve	177/65	193/189	.2389	242	282
White/Nonwhite	170/71	199/83	.9811	241	282

TABLE VII
AGGREGATE MEANS AND DISTRIBUTIONS FOR EARLY VS. LATE GROUPS



* Accompany discriminant analysis

FIGURE 5. Experimental Design Analysis:
Experimental vs. Control Groups (Early)

<u>Variable</u>	<u>EXP</u>	<u>CONT</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_C</u>
HYEC	11.626	11.638	.8923	123	119
PERC	44.13	46.57	.0947	121	118
AGEE	18.97	18.655	.3592	123	119
Single/Married	117/6	114/5	.8006	123	119
NDEP/DEP	117/6	112/7	.3542	123	119
Regular/Reserve	92/31	85/34	.6556	123	119
White/Nonwhite	85/38	85/33	.2281	123	118

TABLE VIII
MEANS AND DISTRIBUTIONS FOR EARLY EXPERIMENTAL AND CONTROL GROUPS

FUNCTION	EIGENVALUE	PERCENT OF VARIANCE	CUMULATIVE PERCENT	CANONICAL CORRELATION
1*	0.04355	100.00	100.00	0.2042656

AFTER
FUNCTION WILKS' LAMBCA CHT-EGLAROC D.F. SIGNIFICANCE
0 . 0.9582633 5.9547 7 0.1912

WILKS' LAMBCA (U-STATISTIC) AND UNIVARIATE F-RATIO
WITH 1 AND 237 DEGREES OF FREEDOM

VARIABLE	WILKS' LAMBCA	=	SIGNIFICANCE
HYEC	0.99991	0.20360-01	0.8867
PERC	0.99273	1.6138	0.1660
GRACE	0.99989	0.26350-71	0.6742
DMS	0.99970	0.10240-01	0.7912
DComp	0.99871	0.3066	0.5806
DEP	0.99795	0.4766	0.4898
AGREE	0.99607	0.9363	0.3345

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP	
		1	2
GROUP 1 (exp)	121	64 52.9%	57 47.1%
GROUP 2 (cont)	118	47 39.6%	71 60.4%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 56.49%

- a. DRace -- White=1 Non-white=0
- b. DMS -- Single=1 Married=0
- c. DComp -- Regular=1 Reserve=0

Table IX

Discriminant analysis results for early experimental vs. control groups.



Figure 6. Discriminant analysis histograms for early experimental vs. control groups.

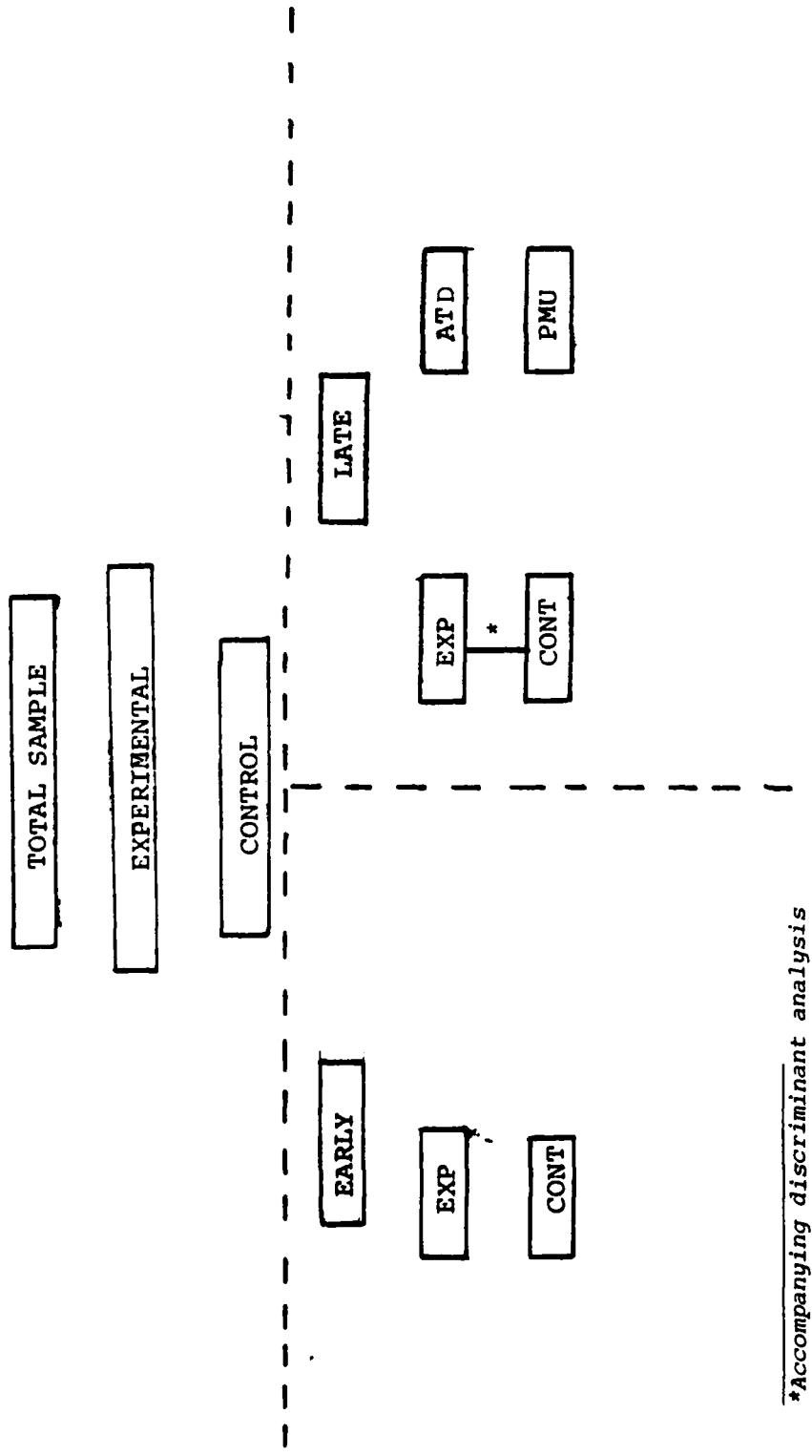


FIGURE 7. Experimental Design Analysis:
Experimental vs. Control Groups (Late)

<u>Variable</u>	<u>EXP</u>	<u>CONT</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_C</u>
HYEC	11.44	11.23	.1031	140	142
PERC	47.52	51.39	.3355	137	141
AGEE	18.66	18.79	.7124	140	142
Single/Married	136/4	140/2	.3993	140	142
NDEP/DEP	135/5	138/4	.3408	140	142
Regular/Reserve	96/44	97/45	.9623	140	142
White/Nonwhite	104/36	95/47	.1229	140	142

TABLE X
MEANS AND DISTRIBUTIONS FOR LATE EXPERIMENTAL VS. CONTROL GROUPS

FUNCTION	EIGENVALUE	PERCENT OF VARIANCE	CUMULATIVE PERCENT	CANONICAL CORRELATION
----------	------------	---------------------	--------------------	-----------------------

1=	0.05972	100.00	100.00	0.2373907
----	---------	--------	--------	-----------

FUNCTION	WILKS' LAMBDA	CHI-SQUARE	D.F.	SIGNIFICANCE
0	0.9436457	15.866	7	0.0269

WILKS' LAMBDA (L-STATISTIC) AND UNIVARIATE F-RATIO
WITH 1 AND 276 DEGREES OF FREEDOM

VARIABLES	WILKS' LAMBDA	F	SIGNIFICANCE
HYFC	0.98570	6.005	0.0463
FFFC	0.97786	6.261	0.0120
DRACE	0.99122	2.444	0.1161
DMS	0.99733	0.1282	0.3910
DComp	1.00000	0.1283-02	0.9741
DSF	0.99752	0.6817	0.4097
AGFE	0.99990	0.26740-01	0.8702

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP	
		1	2
GROUP 1 (exp)	137	84 61.3%	53 38.7%
GROUP 2 (cont)	141	55 39.1%	83 58.9%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 60.07%

- a. DRace -- White=1 Non-white=0
- b. DMS -- Single=1 Married=0
- c. DComp -- Regular=1 Reserve=0

Table XI

Discriminant analysis results for late experimental vs. control groups.

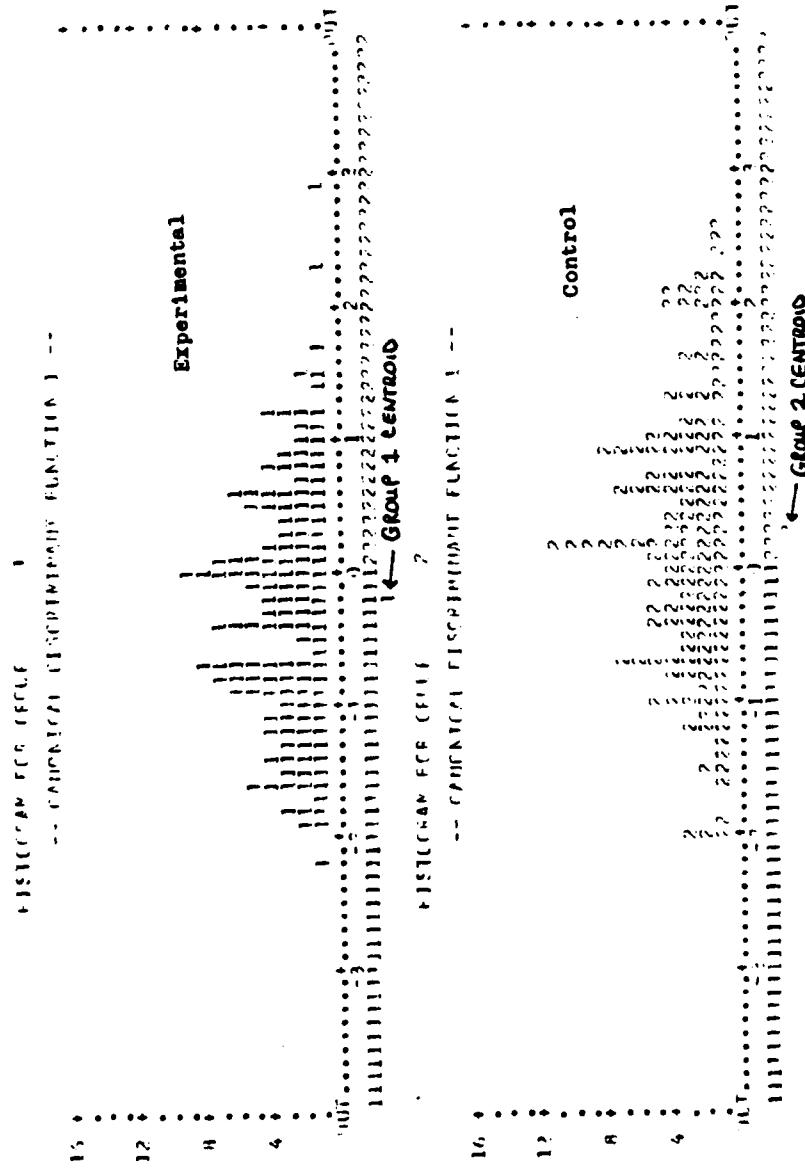


Figure 6. Discriminant analysis histograms for late experimental vs. control groups.

Table IX displays the results of a discriminant analysis contrasting the early ATD experimental and control groups. The discriminant function was not statistically significant; therefore, these two groups are not significantly different from one another on the variables on which their members were assessed. This result parallels the chi-square analysis results shown in Table VIII. The discriminant function was not statistically significant and possesses little power to discriminate among experimental and control groups, as shown by the low eigenvalue and the percent of cases correctly classified. The histogram in Figure 6 visually reinforces the absence of a statistically significant difference between the two groups.

4. Late Experimental vs. Late Control

The next analysis examines all experimental and control personnel in the late group as depicted in Figure 7. This analysis includes both ATD and PMU personnel. The results in Table X indicate no statistically significant differences between the two groups.

The results of a discriminant analysis, shown in Table XI and Figure 8, reveal a statistically significant, yet moderate, success in differentiating between late experimental and control groups. These results generally parallel those in Table X, as the significant variables in the discriminant function, education (HYEC) and AFQT percentile scores (PERC), most closely approach statistical significance in the chi-square analyses.

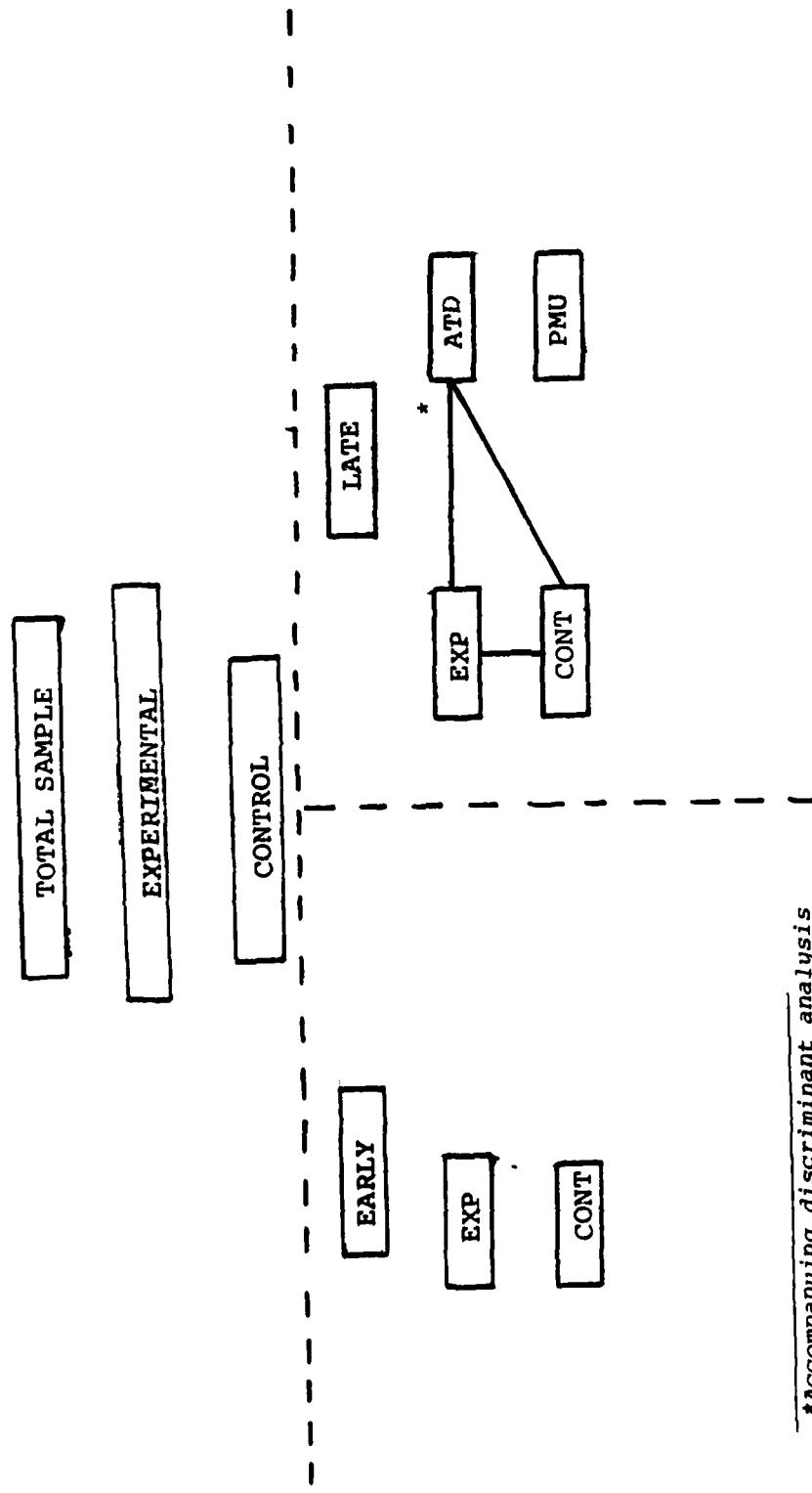


FIGURE 9. Experimental Design Analysis:
ATD Experimental vs. Control Groups

<u>Variable</u>	<u>EXP</u>	<u>CONT</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_C</u>
HYEC	11.547	11.383	.5618	115	115
PERC	46.51	49.93	.5108	114	114
AGEE	18.652	18.29	.6277	115	115
Single/Married	111/4	113/2	.6791	115	115
NDEP/DEP	110/5	112/3	.3678	115	115
Regular/Reserve	80/35	78/37	.8869	115	115
White/Nonwhite	88/27	75/40	.0608	115	115

TABLE XII
MEANS AND DISTRIBUTIONS FOR LATE AND EXPERIMENTAL VS. ATD CONTROL

FUNCTION	EIGENVALUE	PERCENT OF VARIANCE	CUMULATIVE PERCENT	CANONICAL CORRELATION
1	0.05571	100.00	100.00	.2373719

AFTER
FUNCTION WILKS' LAMBDA CHI-SQUARED D.F. SIGNIFICANCE
0 0.9436546 12.904 7 0.0745

WILKS' LAMBDA (L-STATISTIC) AND UNIVARIATE F-STATISTIC
WITH 1 AND 225 DEGREES OF FREEDOM

VARIABLE	WILKS' LAMBDA	F	SIGNIFICANCE
HYPC	0.99277	1.615	0.2000
DERC	0.98392	3.674	0.0500
DRACE	0.98431	3.867	0.0352
DMS	0.99700	0.6807	0.4168
DCEMP	0.99991	0.2029E-01	0.8888
DSF	0.99482	1.176	0.2794
AGRE	0.99963	0.8325E-01	0.7732

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP
GROUP 1 (exp)	114	66 57.5% 44 42.1%
GROUP 2 (cont)	114	48 42.1% 66 57.9%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 57.89%

- a. DRace -- White=1 Non-white=0
- b. DMS -- Single=1 Married=0
- c. DComp -- Regular=1 Reserve=0

Table XIII

Discriminant analysis results for ATD
experimental vs. control groups.

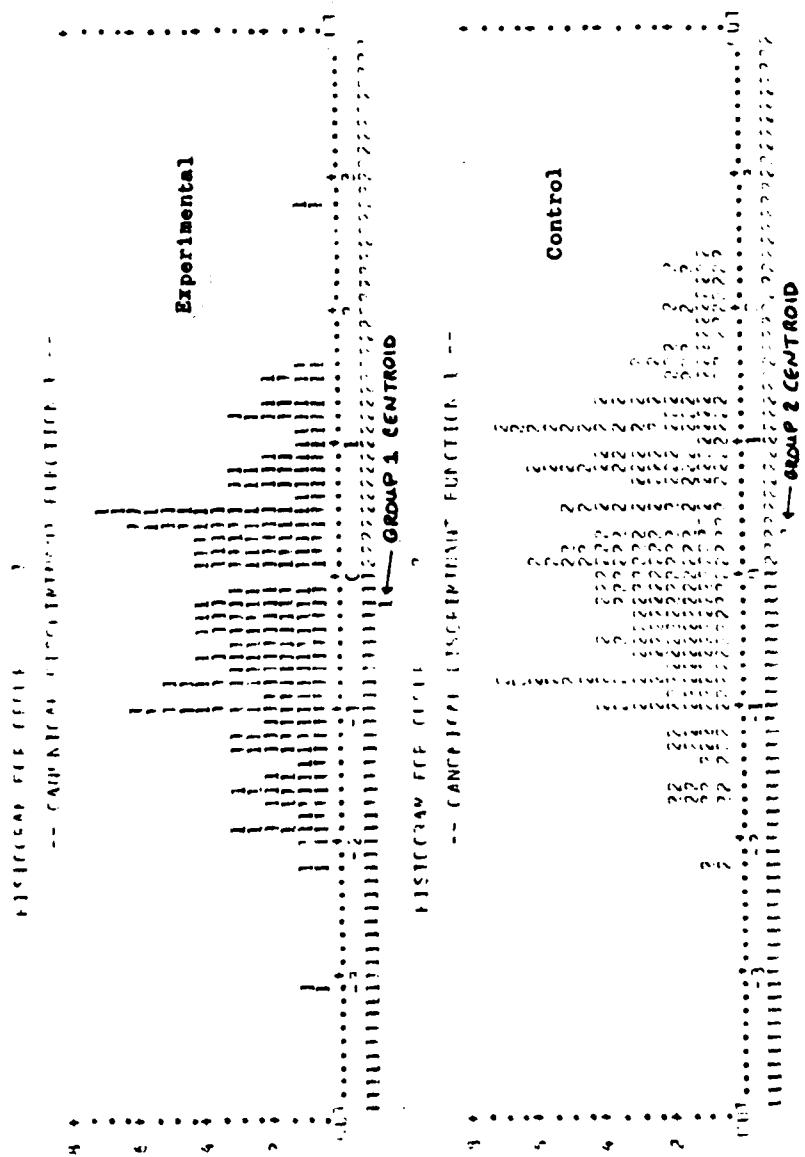


Figure 10. Discriminant analysis histograms for ATD experimental vs. control groups.

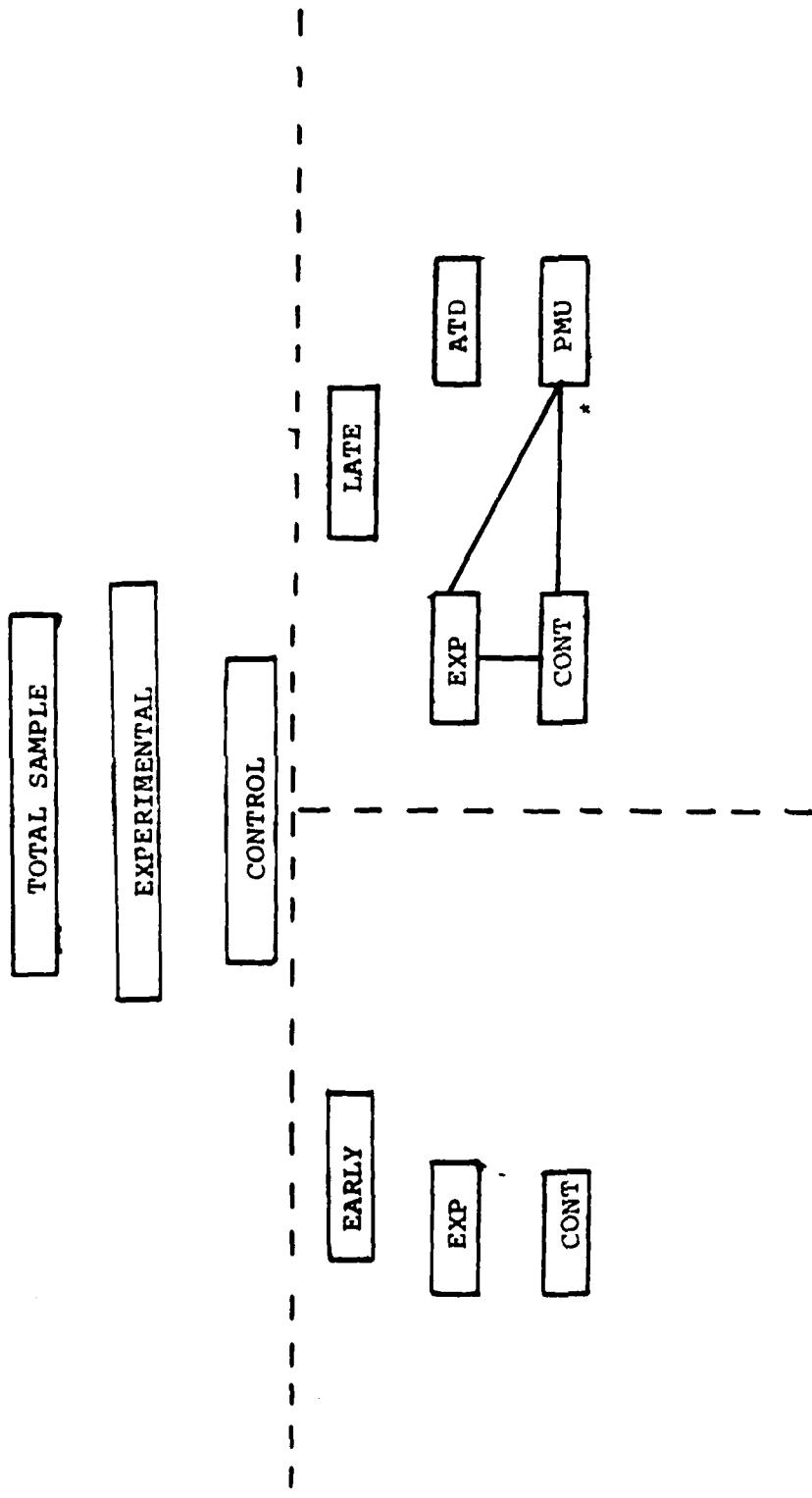
5. Late ATD Experimental vs. Late ATD Control

This analysis, depicted in Figure 9, paralleled the preceding one with the exclusion of data from all PMU personnel. The results of this analysis, shown in Table XII, reveal no statistically significant differences between the two groups.

The results of a discriminant analysis are shown in Table XIII and Figure 10. The derived discriminant function was not statistically significant and is able to discriminate between late ATD experimentals and controls at a rate only slightly better than random chance (57.89 percent vs. 50 percent by chance). The discriminant function derived to differentiate all late experimental and control subjects, both ATD and PMU, as discussed previously and as shown in Table XI, had more discriminating power. After excluding PMU personnel from the analysis, the discriminant function is no longer significant. Future evaluations of RTC CREDO can treat the late ATD experimental and control groups as homogeneous.

6. PMU Experimental vs. PMU Control

The last analysis in this section examined PMU experimental and control personnel. This analysis is depicted in Figure 11. The results shown in Table XIV reveal no statistically significant differences. The results of a discriminant analysis are shown in Table XV and show that the derived discriminant function is not statistically significant, although its discriminating power is better than that of previously derived functions. This increased discriminatory power is reflected by the histograms shown in Figure 12.



* Accompanying discriminant analysis

FIGURE 11. Experimental Design Analysis:
PMU Experimental vs. Control Groups

<u>variable</u>	<u>EXP</u>	<u>CONT</u>	<u>χ^2 probability</u>	<u>N_E</u>	<u>N_C</u>
HYEC	11.24	10.592	.1441	25	27
PERC	50.39	57.59	.3841	23	27
AGEE	18.72	19.41	.8556	25	27
Single/Married	25/0	27/0	---	25	27
NDEP/DEP	25/0	26/1	1.00	25	27
Regular/Reserve	16/9	19/8	.8466	25	27
White/Nonwhite	16/9	20/7	.6272	25	27

TABLE XIV
MEANS AND DISTRIBUTIONS FOR PMU EXPERIMENTAL VS. CONTROL GROUPS

FUNCTION EIGENVALUE PERCENT OF CUMULATIVE CANNONICAL
VARIANCE EIGENVALUE SIGNIFICANCE

1* 0.13810 110.00 100.00 0.3794203

AFTER FUNCTION WILKS' LAMBDA CHI-SQUARED D.F. SIGNIFICANCE

0 0.8634839 6.6151 6 0.3585

WILKS' LAMBDA (L-STATISTIC) AND UNIVARIATE F-RATIO
WITH 1 AND 48 DEGREES OF FREEDOM

VARIABLE	WILKS' LAMBDA	F	SIGNIFICANCE
PERC	0.94479	2.855	0.1252
PERC	0.95170	2.426	
DRACE	0.99750	0.1205	0.7300
DMS	IS A CONSTANT.		
DComp	0.99647	0.1450	0.7041
SEP	0.98262	0.8452	0.3614
AGE	0.99094	0.4387	0.5109

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP
		1 2
GROUP 1 (exp)	23	69.1% 30.4%
GROUP 2 (cont.)	27	29.6% 70.4%

PERCENT OF "GR1LPEC" CASES CORRECTLY CLASSIFIED: 70.00%

- a. DRace -- White=1 Non-white=0
- b. DMS -- Single=1 Married=0
- c. DComp -- Regular=1 Reserve=0

Table XV

Discriminant analysis results for PMU experimental vs. control groups.

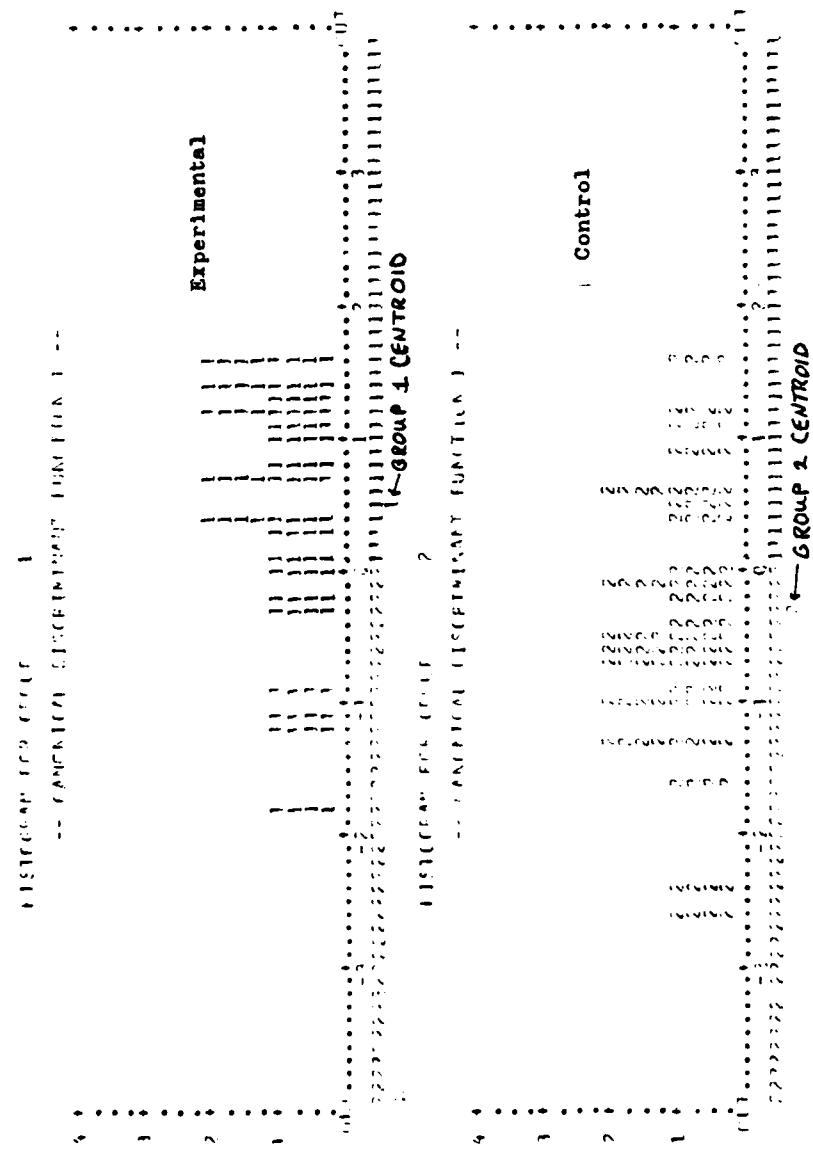


Figure 12. Discriminant analysis histograms for PMU experimental vs. control groups.

7. Summary of Descriptive Results

The results of the preceding analyses and those reported in Appendix F are summarized in Table XVI. Comparisons one through six were discussed in this chapter of the thesis and comparisons seven through thirteen are discussed in Appendix F.

Throughout the descriptive analysis a pattern was established, with one exception, which showed an inverse relationship between mean education levels (HYEC) and AFQT percentile score (PERC). (The differences discussed in this and the next several paragraphs were generally not statistically significant, however.) Experimental personnel generally had higher mean education levels (higher than those of the controls), whereas control personnel always had higher mean AFQT percentile scores. In comparisons between early and late personnel, the former had completed more years of education, whereas the latter had better mean AFQT percentile scores. ATD personnel consistently displayed higher education levels than PMU personnel, while the latter had consistently better mean AFQT percentile scores. Of the four late groups (Table F-5), two groups contained the extremes of both of the education and AFQT variables. The ATD experimentals had the highest mean education level and the lowest mean AFQT percentile score. The PMU control group had the lowest mean education level and the highest mean AFQT percentile score.

Age differences among the RTC CREDO sample revealed that, overall, experimental personnel tended to be older than controls. This was not the case however for PMC personnel where the reverse was true. PMU personnel also were older than ATD personnel. The early group was slightly older on the average than the late group, even when PMU personnel were included.

The findings of these analyses are two-fold. First, the analyses reported in this chapter reveal no significant differences between early ATD experimentals and controls (Comparison 3), late ATD experimentals and controls (Comparison 5), and PMU experimentals and controls (comparison 6). These pairs of groups can be considered homogeneous with respect to the attrition related background variables used in the analysis. Thus, attrition rates for these pairs of groups can be directly compared in future RTC CREDO analyses.

Secondly, the analyses contained in Appendix F and summarized in Table 16 reveal significant differences between ATD and PMU personnel (Comparisons 10, 11, and 13). These findings suggest that future analyses of RTC CREDO should study the attrition performance of ATD and PMU personnel separately.

These findings suggest that analytical techniques such as proportion tests and multiple regressions may be used to examine the counter-attrition effectiveness of RTC CREDO. The paucity of the attrition findings, as reported

COMPARISON

1. Aggregate Experimentals vs.
Aggregate Controls
 - No significant χ^2 probabilities
(Table V)
 - Significant discriminant functions
(Table VI)
(Correct classification 54.35%
vs. 50% by chance)
2. Aggregate Early vs.
Aggregate Late
 - No significant χ^2 probabilities
(Table VII)
3. Early Experimental vs.
Early Control
 - No significant χ^2 probabilities
(Table VIII)
 - No significant discriminant function
(Table IX)
4. Late Experimental vs.
Late Control
 - No significant χ^2 probabilities
(Table X)
 - Significant discriminant function
(Table XI)
(Correct classification 60.07%
vs. 50% by chance)
5. Late ATD Experimentals
vs. Late ATD Controls
 - No significant χ^2 probabilities
(Table XII)
 - No significant discriminant function
(Table XIII)

TABLE XVI
SUMMARY OF RTC CREDO COMPARISON ANALYSES

COMPARISON

RESULTS

6. PMU Experimentals vs.
PMU Controls
 - No significant χ^2 probabilities
(Table XIV)
 - No significant discriminant function
(Table XV)
7. Early ATD vs. Late ATD
 - No significant χ^2 probabilities
(Table F-I)
8. Early vs. Late ATD Experimentals
 - No significant χ^2 probabilities
(Table F-II)
9. Early vs. Late ATD Controls
 - Early group older - significant at
 $P \leq .05$ (Table F-III)
10. Late ATD vs. PMU
 - ATD better educated - significant at
 $P \leq .001$ (Table F-IV)
11. Comparisons Among the Four
Late Groups
 - PMU Control least educated - significant
at $P \leq .01$ (Table F-V)
12. Late ATD vs. PMU Experimentals
 - No significant χ^2 probabilities
(Table F-VI)
13. Late ATD vs. PMU Controls
 - PMU Control less educated - significant
at $P \leq .01$ (Table F-VII)

TABLE XVI
(continued)

in the next section of this chapter necessitated applying multiple regression analyses using dummy variables to represent group (e.g. PMU control) membership.

C. ATTRITION FINDINGS

The attrition findings presented here are necessarily preliminary and tentative, because the individuals in the experimental and control groups had been in the Navy for a relatively brief period of time (one to nine months) when this thesis was written. The results shown here, however, may nevertheless be of interest to Navy manpower and personnel managers, and the methods of analysis should provide useful guidance for later efforts to evaluate the effectiveness of RTC CREDO.

Of the 524 personnel involved in RTC CREDO, a total of 21 personnel were recorded as having attrited on the DMDC submission files as of March 1980. For subsequent multiple regression analyses, the number of attrites was reduced to 18. Three ATD personnel from the early group, 2 experimental and one control, were not considered for further analysis because their attrition was due to medical or physical disabilities. Since RTC CREDO was not designed to address medical or physical problems, inclusion of these three individuals would have been inappropriate in assessing the program's effectiveness in countering attrition. All of the other 18 personnel attrited as a result of behavioral or attitudinal problems. This was determined by examining the Separation

<u>SPD*</u>	<u>N</u>	<u>DESCRIPTION</u>
HKA	1	Misconduct
HKC	1	Misconduct - Homosexual
JMJ	1	Unsuitability - Apathy, Defective Attitudes
JHK	15	Burden to Command due to Substandard Performance or Inability to Adapt to Military Service
TOTAL	18	

*SOURCE: NAVMILPERSCOMINST 1900.1 of 13 Sept 1979

TABLE XVII
DISTRIBUTION OF ATTRITES AMONG SEPARATION PROGRAM
SEPARATION PROGRAM DESIGNATOR (SPD) CODES

SOURCE: DMDC files as of March 1980

Program Designator (SPD) codes carried on the DMDC submission file. These codes are assigned when an individual leaves the service. Table XVII displays the SPD codes assigned to the 18 individuals who have left the Navy.

Three additional personnel were listed on the DMDC files as deserters. Although the probability of their premature separation from service is high, they were included in the analysis as stayers because they were not officially listed as attrites.

Table XVIII displays the means or distributions of attrited personnel and of the entire sample on available descriptive variables.

<u>Variable</u>	<u>Attrites</u>	<u>Total Sample</u>
Highest Year of Education Completed	10.66	11.485
AFQT Percentile	55.83	47.472
Age at Entry	19.05	18.767
Single/Married	18/0	507/17
No Deps/Deps	17/1	502/22
Regular/Reserve	13/5	370/54
White/Non-white	12/6	369/154

TABLE XVIII
MEANS AND DISTRIBUTIONS OF ATTRITES AND TOTAL SAMPLE FOR SELECTED VARIABLES AS OF MARCH 1980

Table XIX displays the distributions of attrites among experiment and control groups, divided into ATD and PMU components. There were only two attrites from the early groups (which were all ATD personnel): one experimental and one control subject.

Seventeen of the attrites separated from service within three months of completion of the RTC CREDO workshop for which they were either an experimental or control subject. The eighteenth attrite separated prior to six months after his workshop. In many cases, the time to attrition was only a matter of days or weeks. The PMU experimental attrites (6) averaged 22 days from workshop completion to service separation, with a range of from 14 to 32 days. The PMU control attrites (9) averaged just under 21 days to separation, with a range of from 9 to 55 days.

Although these attrition statistics are early (because these people are in the early stages of their enlistments), there is further indication (in addition to the reasons provided by the results presented in the previous chapter of this thesis) that future study of the RTC CREDO population should separate ATD personnel from PMU personnel and examine each component separately. The number of PMU attrites and their extremely short times to separation may indicate that these personnel would have attrited regardless of any efforts to remediate their behavioral and attitudinal deficiencies.

<u>GROUP</u>	<u>N</u>	<u># ATTRITES</u>	<u>% ATTRITION</u>
Experimental (EXP)	263	8	3.0
Control (CONT)	261	10	3.8
Apprentice Training Division (ATD)	472	3	.6
Positive Motivation Unit (PMU)	52	15	28.8
ATD EXP	238	2	.8
EARLY	123	1	.8
LATE	115	1	.8
ATD CONT	234	1	.4
EARLY	119	1	.8
LATE	115	0	0
PMU EXP	25	6	24.0
PMU CONT	27	9	33.0
TOTAL RTC CREDO	524	18	3.4

TABLE XIX
ATTRITION AS OF MARCH 1980 FOR VARIOUS GROUPINGS

<u>GROUP</u>	<u>N</u>	<u>ATTRITES</u>	<u>% ATTRITES</u>
<u>ATD</u>			
White Experimental	173	0	0
Non-white Experimental	65	2	3.0
White Control	160	1	.6
Non-white Control	73	0	0
TOTAL ATD	<u>471</u>	<u>3</u>	<u>.6</u>
<u>PMU</u>			
White Experimental	18	3	16.7
Non-white Experimental	9	3	33.3
White Control	18	8	44.4
Non-white Control	7	1	14.3
TOTAL PMU	<u>52</u>	<u>15</u>	<u>28.8</u>
TOTAL*	523	18	3.4

*One Missing Case

TABLE XX
RACIAL DISTRIBUTION OF ATTRITES AS OF MARCH 1980: WHITE VS.
NON-WHITES

PMU attrition was actually greater than is reported here,⁵ because not all known PMU losses had been reported on the DMC submission file as of March 1980.

The racial distribution of the attrites is presented in Table XX. The recency and suspected incompleteness of the data preclude any assessment of the possible differential effects of the RTC CREDO upon whites and non-whites, although future researchers should not overlook this possibility. Overall, first-term enlisted attrition for non-whites has been historically higher than for whites.⁶ Additionally, some informed observers have hypothesized that the RTC CREDO experience may be better suited for majority group personnel than it is for non-whites.

D. REGRESSION ANALYSES RESULTS

After approximately another year, there will probably be enough attrition from the various groups to make proportion

⁵ Based on personal communication with PMU staff personnel.

⁶ DMDC cohort file analyses show, for example, the following statistics:

Percent Attrition from the Navy for First Three Years of Active Duty (FY 73-76 Male Non-Prior Service Accessions)

<u>Group</u>	<u>GED</u>	<u>Non-High School Graduates</u>	<u>High School Graduates</u>
Black	51.0	60.4	33.0
Non-Black	47.2	54.2	25.5

tests of the differences between pairs of group attrition rates (e.g. PMU experimental vs. PMU control) a practical approach to determining whether or not the experimental groups have lower attrition than the control groups. At the time of this writing, however, multiple regression is useful as an analytical technique because it allows one to use data from all of the groups at the same time, thus increasing the number of observations used in making statistical comparisons. In future analyses of the RTC CREDO experimental and control groups, multiple regression will be useful because it will allow one to estimate the separate or joint relationships of various demographic variables and participation in RTC CREDO with attrition from the Navy.

Multiple regression analyses were performed on the data using as the dependent variable the probability of non-attrition prior to nine months of service. The cut-off figure of nine months was selected as this figure represents the maximum amount of military service that a non-prior service (NPS) recruit could have following completion of his RDC CREDO workshop. This is merely the difference between July 1979, when the first workshop was conducted, and March 1980 which was the currency of the DMDC data used in this study.

The reader is again reminded that this analysis is being done early, i.e., not much time has elapsed since the experimental (RTC CREDO) workshops were held. As of the time of this writing, only three months have elapsed since the last

RTC CREDO workshop and 11 months since the first workshop. The attrition results will be more useful for the Navy one or more years from now. Additionally, because it is so early, the more recent groups are likely to have experienced less attrition than the early groups simply because of the difference of length of enlistment in the Navy. The effects of this will be less bothersome as the cohorts age (because the rate of attrition from an enlistment cohort slows with the passage of time--particularly beyond one year of service as can be seen from the attrition statistics displayed in Table I).

Two step-wise regression analyses were performed. The first used the following independent variables as predictors of non-attrition:

HYEC - Highest year of education completed

PERC - AFQT percentile score

AGEE - Age at service entry

TIME - Time in service since completion of RTC CREDO
(in days)

MAJ - Racial majority

* MIN - Racial minority

NDEP - No dependents

* DEP - Dependents

EARLY - RTC CREDO workshops 1-6 (ATD only)

LATE - RTC CREDO workshops 7-11 (ATD only)

* LATEP - RTD CREDO workshops 7-11 (PMU only)

EXP - Experimental status

* CONT - Control status

where the starred dummy variables are subsumed in the constant in the regression equation.

The continuous variable TIME was used to control for the relationship between length of service and attrition. The dummy variables EARLY and LATE were used to control statistically for group differences found in the analyses discussed in the previous section of this chapter and Appendix F of this thesis (Tables F-4, F-5, and F-7 showed, through chi-square analyses, that certain ATD and PMU groups could not be considered as being homogeneous groups when they were constituted).

The original sample size was reduced from 524 to 498 by eliminating the medical and physical disability attrites, and by limiting total active military service to nine months. Additionally, some cases were missing AFQT percentile scores and were not included in the analysis.

The results of this analysis are presented in Table XXI. These results reveal that as of the currency of the available data, the single most significant predictor of non-attrition for RTC CREDO is "Late" status, i.e., being an ATD subject from one of the late RTC CREDO workshops (workshops 7-11). The second most powerful predictor is "Early" status, or, being an ATD subject from one of the early workshops (1-6). Both Early and Late are extremely powerful predictors and show the high survival rate of ATD personnel compared to the survival rate of PMU personnel. These results corroborate the results shown in Table XIX which revealed that of the 18

<u>INDEPENDENT VARIABLE</u>	<u>B</u>	<u>F</u>
LATE	.2912517	120.836**
EARLY	.3549196	93.325**
TIME	-.0004789	8.477**
MAJ	.0817138	1.197
HYEC	.0086410	1.11
PERC	-.0060602	1.050
NDEP	-.0308118	< 1
AGEE	-.0013891	< 1
EXP	.00619	< 1***
CONSTANT	.7052306	
R ²	.24797	

*N = 409; Restriction on Sample: Total Active Military Service Limited to < 9 Months. Data are from DMDC files as of March 1980.

**P < .0005

***Not included in equation.

MAJ ≡ Racial Majority = 1; Minority = 0
 NDEP ≡ No Dependents; Dependents = 2
 EXP ≡ Experimental Status = 1; Control = 0
 EARLY ≡ Workshops 1-6 = 1; Workshops 7-11 = 0
 LATE ≡ Workshops 7-11 (ATD only) = 1; Workshops 7-11 (PMU) = 0.

TABLE XXI
 REGRESSION ANALYSIS OF THE PROBABILITY OF SURVIVAL (NON-ATTRITION)
 PRIOR TO NINE MONTHS OF SERVICE*

attrites (by March 1980), three were from the ATD groups and 15 were from the PMU groups.

The variable TIME also has a substantial significant regression coefficient and shows that survival probability declines as time in the Navy increases.

Those predictor variables which have been cited in previous research [Lockman and Warner, 1977] as the most powerful predictors of non-attrition--education level, AFQT percentile score, and age at entry--were not statistically significant in this very early analysis. The near even split (8, 10) among experimental and control attrites is reflected in the insignificance to date of the regression coefficient of the dummy variable EXP which compares the attrition of the experimental group with that of the control group.

A second regression analysis was performed utilizing the same predictor variables (with the addition of the EARLY, LATE, and TIME variables for the reasons discussed earlier) which Lockman [1976] used in construcing the SCREEN table. Three changes were made to how Lockman's predictor variables were formed: racial majority was substituted for racial minority, negative dependent status for positive dependent status, and Mental Categories I and II were combined. The latter was done because the entire sample contained only four Mental Category I personnel (of whom two attrited). The dependent variable used was "survival" (non-attrition) probability rather than the probability of attrition used by Lockman.

The independent variables used in this analysis were:

LT12ED - Less than high school graduation

*12ED - High school graduation

GT12ED - Greater than high school graduation

MC12 - Mental Categories I and II

*MC3U - Mental Category III upper

MC3L - Mental Category III lower

MC4 - Mental Category IV and below

AGE17 - Age at entry 17 and below

AGE18-19 - Age at entry 18-19

*AGE20 - Age at entry 20 and above

MAJ - Racial majority

*MIN - Racial minority

NDEP - No dependents

*DEP - Dependents

*EARLY - RTC CREDO Workshops 1-6 (ATD only)

LATE - RTC CREDO Workshops 7-11 (ATD only)

*LATEP - RTC CREDO Workshops 7-11 (PMU only)

EXP - Experimental status

*CONT - Control Status

TIME - Time in service (in days) since completion of
RTC CREDO

Where the starred dummy variables are subsumed in the constant
in the in the regression equation.

The results of this analysis are shown in Table XXII.

These results closely parallel those found in Table XXI

<u>INDEPENDENT VARIABLES</u>	<u>B</u>	<u>F</u>
LATE	.2952726	123.946**
EARLY	.3634601	97.215**
TIME	-.0004934	8.812**
LT12ED	-.0250261	1.531
AGE17	.0164015	<1
MAJ	.9151654	<1
MC12	.0180282	<1
NDEP	-.021389	<1
MC3L	.0091204	<1
MC4	.0102304	<1
AGE20	.0066158	<1
GT12ED	-.0227563	<1
EXP	.0050236	<1
Constant	.7351537	
R ²	.24932	

*N = 498; Restriction on Sample: Total Active Military Service Limited to < 9 months. Data are from DMDC files as of March 1980.

**P < .0005

MAJ ≡ Racial Majority = 1; Minority = 0
 NDEP ≡ No Dependents = 1; Dependents = 0
 EXP ≡ Experimental Status = 1; Control = 0
 EARLY ≡ Workshops 1-6; Workshops 7-11 = 0
 LATE ≡ Workshops 7-11 (ATD only)=1; Workshops 7-11 (PMU) = 0

TABLE XXII
 REGRESSION ANALYSIS OF THE PROBABILITY OF SURVIVAL
 (NON-ATTRITION) PRIOR TO NINE MONTHS OF SERVICE*

for the statistically significant prediction variables: Early, Late, and Time. By using dummy variables for those variables which had been treated as continuous in the previous regression (years of education completed, AFQT percentile scores, and age upon service entry) the R-square value was minutely increased (to .24932 from .24797). The regression coefficient for experimental vs. control (exp) is not significant in this analysis, either.

1. Summary of Regression Analysis Results

The results of the regression analysis were virtually identical. The variables Early, Late, and Time were found to be the only statistically significant non-attrition predictors. These findings are driven, however, but the extremely small numbers of ATD attrites found in the early and late groups (2, 1 respectively), the short times between workshop completion, and service separation (particularly on the part of the PMU personnel) and the limited amount of time elapsed since the experiment began. Those predictors of non-attrition which earlier research has shown to be significant (years of education completed, mental ability, and age at service entry) were not significant predictors at this time.

It is possible that the two regression equations derived in this analysis will compute non-attrition (survival) probabilities greater than unity. For example, those individuals who are late ATD control personnel, white, high school graduates with dependents and who have been in the Navy 200 days

have survival probabilities of 1.07 and 1.03 from the regression equations given in Tables XXI and XXII, respectively. This anomaly can occur with ordinary least squares multiple regression when a 1,0 variable is used as the dependent variable. Although upsetting to some statisticians, the practical importance of this phenomenon is considered minimal [see Lockman and Warner, 1977 for a discussion of this issue].

It is expected that, as the RTC CREDO population ages and more data are available, the importance of the variable TIME will diminish in favor of the historically significant predictor variables (years of education completed, AFQT percentile scores, and age at service entry). The variables Late and Early may maintain their importance, as they differentiate ATD from PMU personnel.

Although these results are preliminary and tentative, either of the two regression analysis approaches can be used in future studies of the effectiveness of RTC CREDO in countering first-term enlisted attrition.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. LIMITATIONS ON CONCLUSIONS

The methods by which subjects were selected for this study of the effectiveness of the RTC CREDO place limits on the inferences that can be made from the results of this study and from later follow-up studies using these subjects. The subjects were all males undergoing training at the Naval Training Center (NTC), Great Lakes, Illinois, during the period of the experiment (9 July 1979 - 13 March 1980). Females were not used, and no subjects were used from the NTCs at Orlando, Florida, or San Diego, California. However, RTC CREDO used personnel representing most of the monthly inputs to Great Lakes.

The personnel used in the experimental control groups of this study came from the PMU at the Recruit Training Center (RTC) or the ATD. Individuals assigned to the PMU are not representative of RTC personnel in general; therefore any findings from the PMU group in this study should not be generalized to the RTC population.

The ATD personnel used for RTC CREDO were chosen in two ways; for the first six workshops (see Table II), subjects were selected by a Senior Chief Petty Officer based upon a review of personal records; for the last five workshops, ATD personnel were randomly assigned to Experimental or Control

groups. Clearly, the results from the first six groups of ATD personnel (ATD "early") can be generalized only to the population of ATD trainees who would be selected for RTC CREDO attendance via personnel record review by a particular Navy Senior Chief. The results from the last five ATD groups (ATD "late"), given the random subject selection, should be more generally applicable to ATD personnel.

The data analyses reported in this thesis have taken into account the possible differences among three sources of experimental control personnel (PMU, ATD early, and ATD late). Analyses done in the future should also consider the selection differences among these three groups.

B. CONCLUSIONS/RECOMMENDATIONS

To conclude that RTC CREDO was successful or unsuccessful in countering first-term enlisted attrition would be premature at this time. The attrition data analyzed here are based only on the number of attrites as recorded in the DMDC submission files as of March, 1980. Administrative delays and inconsistencies in compiling data for submission to DMDC strongly imply that the number of attrited RTC CREDO personnel exceeded that which was found in the DMDC files. As the cohorts age, the data in the DMDC cohort files should become more accurate and a more appropriate data source.

The differences between ATD and PMU personnel on education levels and AFQT percentile scores indicate that future analyses of RTC CREDO should treat them as different groups. The doubt

which has been raised and discussed concerning the appropriateness of some PMU personnel as RTC CREDO subjects would also indicate that ATD and PMU personnel should be grouped separately.

The absence of doubt would not alter the thrust of the argument that ATD and PMU personnel ought to be considered separately. There is a difference between ATD and PMU personnel in observed, overt behavior on the part of the individuals in each group. PMU personnel are non-recruit graduates whose unsatisfactory behavior and attitudes have necessitated special remedial attention. ATD personnel, however, have been successful in completing recruit training. Clearly, RTC CREDO could not have helped those PMU individuals who may have been awaiting Recruit Evaluation Board action and consequent discharge from the Navy. Thus, the impact of RTC CREDO on PMU personnel cannot be determined until all doubts pertaining to their selection as RTC CREDO candidates are dispelled.

The regression analyses performed for this thesis should only be viewed as a preliminary and extremely tentative assessment of RTC CREDO's counter-attrition effectiveness. The recency and incompleteness of the data mean the analyses and results should only be used as guideposts for future researchers to follow in subsequent RTC CREDO studies. As the RTC CREDO population ages, more complete data will become available (including the disposition of some or all of the 28 missing

cases cited earlier), and it should be possible to make conclusions concerning RTC CREDO's counter attrition effectiveness.

Specific recommendations for future research of RTC CREDO include the following:

- The use of the DMDC Cohort File instead of DMDC's monthly submission file--the Cohort File is compiled annually and is the most complete and accurate record of all enlisted personnel.
- Data from ATD and PMU personnel should be kept separate--each group was shown to be internally homogeneous however significant differences exist between groups. Also, the process of screening out PMU personnel indentified for discharge prior to RTC CREDO attendance may be impossible.
- Attention to the racial distribution of attrites--the RTC CREDO experience may differentially address the motivational and personal growth needs of minority and majority personnel.
- Analysis of individual RTC CREDO workshops--although sample sizes would be small, RTC CREDO's effectiveness in countering attrition could be studied by comparing separately the experimental and control groups from each workshop.
- Post RTC CREDO follow-up for experimental personnel still in service--the value of RTC CREDO to the Navy may be reflected in criteria beyond attrition. CREDO and RTC CREDO's primary stated goals are enhancement of personal growth and spiritual development. The success of RTC CREDO may be reflected in criteria broader than just attrition.

The objectives of this thesis were to describe the construction of the RTC CREDO design, execute preliminary data analyses, and provide initial attrition findings. Indications for future research have been suggested which, with the passage of time and accumulation of data, should lead to a fuller and more comprehensive assessment of RTC CREDO's effectiveness in reducing first-term enlisted attrition.

APPENDIX A
INTERSERVICE SEPARATION CODE LISTING FCR CODES 6 - 8

- 6 Failure to Meet Minimum Behavioral and Performance Criteria
 - 61 Substandard Performance of Duty
 - 63 Failure on Course of Instruction
 - 64 Alcoholism
 - 67 Drugs
 - 68 Financial Irresponsibility
 - 72 Security
 - 73 Court Martial
 - 75 AWOL, Desertion
 - 76 Homosexuality
 - 78 Good of the Service
 - 79 Failure of the Selection for Promotion
 - 80 Unsuitability (Other)
 - 81 Unfitness or Unacceptable Conduct (Other)
 - 85 Failure to Meet Minimum Retention Requirements

APPENDIX B
TYPICAL RTC CREDO WORKSHOP FORMAT

MONDAY

2000 Gather participants
Establish:
 1. confidentiality
 2. goal to establish a supportive
 community
 3. not psychotherapy, not encounter group
 free to participate on whatever level
 one chooses
 4. committed to complete process - no
 leaving before done
 5. expectations:
 a. to deepen personal & spiritual
 growth
 b. to enhance respect for each
 person and ones self
 c. to encourage honest relation-
 ships
 d. to allow processes to occur
 naturally, allowing the Spirit
 to work
2100 Arrive at workshop site; housekeeping
2115 a. choose someone to know better
2130 b. choose another not normally friendly with
2145 c. second pair recruit a third
2215 Large group listen to MUSIC: INTERNAL PAIN
2300 a. maintain silence until breakfast
 b. draw name of fellow participant
 1. tasked to look after that person unobtru-
 sively, anonymously - at least until
 end of weekend.

TUESDAY

0730 Breakfast
0830 Return to triad, reflect on events to date
0930 Large group report out:
 each participant introduces self, others, in triad,
 reconstructs how got together, evaluates how
 group progressing
1200 Light lunch
1300 Large group MUSIC: SOCIAL PAIN
1345 Small group (6-8) assigned by staff (optional)
1600 Recess when they so choose
1800 Supper - simple & hearty
1900 Large group MUSIC: INTERNAL PAIN
1945 Silent period
2000 Large group - interaction period
2200 Permit to go to bed or stay up and talk into the night

WEDNESDAY

0730 Breakfast
0830 Large group MUSIC: CONTEMPLATION OF LIFE GOALS
0915 Silent walk in nature
1015 Large group - read out, state of participants
1200 Light lunch
1300 Large group MUSIC: REFLECTIVE OF CHANGE
1345 Merge two small groups; large group continues
1530 Recess when so choose; free time
1800 Simple supper
1900 Large group MUSIC: SUPPORT
1930 Silent period
1945 Large group - interaction period
encourage sharing, as is last night
2200 Permit to go to bed or stay up

THURSDAY

0700 Breakfast
0730 Large group MUSIC: SUPPORT II
0800 Large group - interaction period
0900 Large group MUSIC: HOPE
1000 Large group - reflection period
a. chaplain input: summary of what has transpired
in context of essential ingredient of love/
compassion
b. relate to biblical parallels: Abraham/Isaac,
Jacob/Esau, Peter, Paul, Magdelain
c. specifically relate to life of Jesus
1. pain, rejection, triumph, constancy of
love
2. presence thru Holy Spirit
3. gift of Himself in Eucharist
a. if Roman Catholic & Protestant
clergy present: simultaneous
celebration
b. if Protestant or Roman Catholic
only - spiritual communion for
unrepresented group
c. unchurched, or reluctant options:
1. be together with others but
not receive
2. break for 30 minutes and do
something together
1100 Rejoin large group
1130 Festive simple lunch; clean up
1300 Return to RTC

FOLLOW UP

Recruits: 1 session of 1 hour the next week Thursday
Staff:

BASIC GROUND RULES

1. Confidentiality stressed.
2. Dignity of individual respected; particularly the religious tradition (or lack of) of participants.
3. Privacy of individual respected:
 - a. personal information only divulged by individual as he sees fit
4. Participant encouraged to participate in each session, however, involuntary confrontation is strongly guarded against as are any attempts at psychotherapy, encounter techniques, or religious coercion.
5. Reading material, watches, radios, alcohol and other diversionary material not permitted.

APPENDIX C
SAMPLE HARD CARD

NAME										SSN	BR/CL	COMPANY	DOA/BILLET	EDUC	RELIG	TLR COE
ASVAB		WK	AR	AC	AO	INO	SI	EI	MK	GS	GI	SP	AI	AFQT	INO + AD	
POE (AFES)					DOE			POB			DOB					
ADULT NEXT OF KIN (PARENT/SPOUSE/GUARDIAN)										RELATIONSHIP						
ADDRESS										CITY		STATE (ZIP)				
SWIM QUALS		WST	ID CARD		ID TAG		CLASS DATE		INIT	FFTU						
ACADEMIC PROGRESS TEST										TESTING OFFICER ACTIONS/COMMENTS						
READING TEST LEVEL																
	WEEKLY TEST GRADE	RETAKE GRADE														
1																
2																
3																
4																
ATD																
MID																
FINAL																
COMP																
RECRUIT PERFORMANCE DATA																
PERSONNEL INSPECTIONS			LOCKER INSPECTIONS			BUNK INSPECTIONS			PHYSICAL TRAINING TEST							
1			1			1			1							
2									2							
3			2			2			3							
4									4							
5									FINAL							
6			3			3			WEIGHT LBS HEIGHT INS DATE							
7									FFTU COMMENTS							
8			4			4										
SWT ASSIGNMENT PERFORMANCE COMMENTS.																
RECRUIT DATA RECORD 9ND-NTC-1085/19 (REV. 9-77)																

APPENDIX D: ATD DATA SHEET

ATD DATA SHEET FOR CREDO STUDY

1. Recruits Name: _____, _____, _____
(LAST NAME) (FIRST) (INI)

2. Social Security Number: _____ - _____ - _____

3. CREDO Start Date: _____ (Day) _____ (Month) _____ (Year)
(Needed for CREDO attendees and for Control Group)

4. Did he attend CREDO?

Check One: YES _____
NO _____

5. Designation

Check One SN _____
FN _____
AN _____

ITEMS BELOW TO BE COMPLETED WHEN INDIVIDUAL HAS COMPLETED ATD OR ATTRITED FROM ATD

6. Number of setbacks: _____ (0=None, 1=one, etc.)

7. Military Infraction Data:

a. Number of less than NJP infractions: _____ (0=None, etc.)

b. Number of NJPs: _____ Number

c. Number of Summary Courts Martial: _____ Number

d. Number of Special Courts Martial: _____ Number

8. Did he attrite from ATD? (We only want you to put a "yes" if he attrited because he didn't perform or he got into trouble.)

Check one answer: Yes _____
No _____

APPENDIX E
DESCRIPTIVE STATISTICS FOR INDIVIDUAL RTC CREDO WORKSHOPS

WORKSHOP 1 9-12 July 1979

<u>Variables</u>	<u>EXP</u>	<u>CONT</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_C</u>
HYEC	11.5	10.82	.1375	12	11
PERC	39.27	52.84	.3888	11	11
AGEE	20.83	18.18	.1847	12	11
SINGLE/MARRIED	12/0	9/2	.4207	12	11
NDEP/DEP	12/0	9/2	.4207	12	11
REGULAR/RESERVE	9/3	3/8	.0613	12	11
WHITE/NONWHITE	7/5	8/3	.7750	12	11

WORKSHOP 2 26-29 July 1979

HYEC	11.5	11.1	.1885	22	19
PERC	42.64	45.44	.1730	22	18
AGEE	19.77	18.95	.0872	22	19
S/M	21/1	18/1	.9153	22	19
NDEP/DEP	21/1	18/1	.9153	22	19
REG/RSV	15/7	9/10	.1744	22	19
W/NW	16/6	13/6	.5521	22	19

WORKSHOP 3 2-5 August 1979

HYEC	10.65	11.67	.3323	8	6
PERC	50.12	54.33	.1730	8	6
AGEE	18.5	18.5	.6313	8	6
S/M	8/0	6/0	--	8	6
NDEP/DEP	8/0	6/0	--	8	6
REG/RSV	3/5	4/2	.2842	8	6
W/NW	5/3	6/0	.0867	8	6

WORKSHOP 4 20-23 August 1979

HYEC	11.68	11.93	.3472	28	29
PERC	46.96	50.17	.5826	28	29
AGEE	18.28	18.59	.0873	28	29
S/M	25/3	28/1	.5789	28	29
NDEP/DEP	25/3	27/2	.3086	28	29
REG/RSV	21/7	25/4	.4616	28	29
W/NW	22/6	18/10	.2749	28	29

WORKSHOP 5 24-27 September 1979

<u>Variable</u>	<u>EXP</u>	<u>CONT</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_C</u>
HYEC	11.86	11.93	.5763	28	30
PERC	44.71	42.03	.7207	28	30
AGEE	18.54	18.5	.8353	28	30
M/S	27/1	29/1	.9604	28	30
NDEP/DEP	27/1	28/2	.6116	28	30
REG/RSV	25/3	28/2	.5831	28	30
W/NW	23/5	24/6	.8302	28	30

WORKSHOP 6 15-18 October 1979

HYEC	11.76	11.69	.3793	25	24
PERC	41.75	44.04	.1185	24	24
AGEE	18.76	17.75	.7089	25	24
M/S	24/1	24/0	.3222	25	24
NDEP/DEP	24/1	24/0	.3222	25	24
REG/RSV	19/6	16/8	.4697	25	24
W/NW	12/13	16/8	.2203	25	24

WORKSHOP 7 26-29 November 1979

HYEC	11.78	11.73	.5189	28	30
PERC	48.88	50.17	.3796	28	30
AGEE	18.5	18.77	.3388	28	30
M/S	25/3	29/1	.2676	28	30
NDEP/DEP	25/3	27/3	.5488	28	30
REG/RSV	19/9	21/9	.8601	28	30
W/NW	20/8	19/11	.5116	28	30

WORKSHOP 8 17-20 December 1979

HYEC	11.32	10.8	.4342	31	25
PERC	48.03	51.21	.6051	30	24
AGEE	18.06	18.72	.2693	31	25
M/S	31/0	25/0	---	31	25
NDEP/DEP	30/1	25/0	.3134	31	25
REG/RSV	22/9	11/14	.0774	31	25
W/NW	21/10	17/8	.5161	31	25

WORKSHOP 9 14-17 January 1980

<u>Variable</u>	<u>EXP</u>	<u>CONT</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_C</u>
HYEC	11.3	11.1	.7245	27	31
PERC	50.3	57.48	.6687	27	31
AGEE	18.22	18.13	.2355	27	31
M/S	26/1	30/1	.9207	27	31
NDEP/DEP	26/1	30/1	.9207	27	31
REG/RSV	18/9	23/8	.5297	27	31
W/NW	23/4	26/5	.8903	27	31

WORKSHOP 10 25-28 February 1980

HYEC	11.39	11.26	.2753	28	27
PERC	45.61	48.67	.6299	28	27
AGEE	18.64	18.81	.6778	28	27
M/S	28/0	27/0	---	28	27
NDEP/DEP	28/0	27/0	---	28	27
REG/RSV	17/11	21/6	.1710	28	27
W/NW	23/5	18/9	.3191	28	27

WORKSHOP 11 10-13 March 1980

HYEC	11.09	11.21	.2103	26	29
PERC	48.0	50.76	.4423	26	29
AGEE	20.04	19.55	.3544	26	29
M/S	26/0	29/0	---	26	29
NDEP/DEP	26/0	29/0	---	26	29
REG/RSV	20/6	21/8	.7015	26	29
W/NW	17/9	15/14	.4288	26	29

APPENDIX F SUPPLEMENTAL DESCRIPTIVE STATISTICS

Procedures

This appendix contains cross-tabulated analyses which supplement those reported in the Procedures and Results section of this thesis. All analyses reported herein used the same variables which were used in the previous analyses.

Descriptive Results

Early ATD vs. Late ATD Groups

Figure F-1 depicts the analysis of all ATD personnel divided into early and late groups. The results shown in Table F-1 reveal no statistically significant differences between the two groups (all χ^2 -square probabilities $> .05$).

Early vs. Late ATD Experimentals

The analysis of ATD experimentals divided into early and late groups is depicted in Figure F-2, and the results in Table F-2. No statistically significant differences were revealed between the two groups.

Early vs. Late ATD Controls

Figure F-3 depicts the comparisons between early and late groups using only ATD control personnel. The results are presented in Table F-3. The difference between the distributions of ages of the two groups is statistically significant. The early ATD controls not only contained more people in the 17-19 year old range than the early group (88/74), but also

had individuals who were at the upper extreme of the age range (29), whereas the late group did not.

With the exception of the statistical significance of the age variable in this analysis, the ATD experimental and control groups displayed a similar pattern when divided into early and late components: for both experimentals and controls the early groups' mean years of education (HYEC), AFQT percentile score (PERC), and age upon service entry (AGEE) have been higher, lower, and older, respectively, than those of the late group.

Late ATD vs. PMU

All late ATD personnel were compared to all PMU personnel. This comparison is depicted in Figure F-4. The results in Table F-IV reveal a highly significant difference in years of education (HYEC) between the two groups. ATD personnel averaged over one and a half more years of education as their PMU counterparts. Although PMU personnel averaged over five points higher in AFQT percentile scores (PERC) than ATD personnel, the difference was not statistically significant.

Comparison Among the Four Late Groups

This analysis is depicted in Figure F-5. This was an analysis of the late groups in which the four possible combinations of experimental and control personnel were divided: ATD experimental, ATD control, PMU experimental, and PMU control. The results shown in Table F-V reveal highly significant differences in education levels among the five groups. These results show that the PMU control personnel were the

best educated, scored higher in mental ability and were the oldest of the four groups of personnel.

Late ATD Experimentals vs. PMU Experimentals

Figure F-6 depicts the analysis of all late experimental personnel divided into ATD and PMU components. The results shown in Table F-VI reveal no statistically significant differences between the two groups.

Late ATD Controls vs. PMU Controls

Figure F-7 depicts the analysis of all late control personnel divided into ATD and PMU components. The results shown in Table F-VII reveal a highly significant difference between the two groups in level of education. A similar level of significance for this variable was found in the analysis reported in Table F-V, and can be attributed to the lower educational achievements in the PMU control gorup personnel.

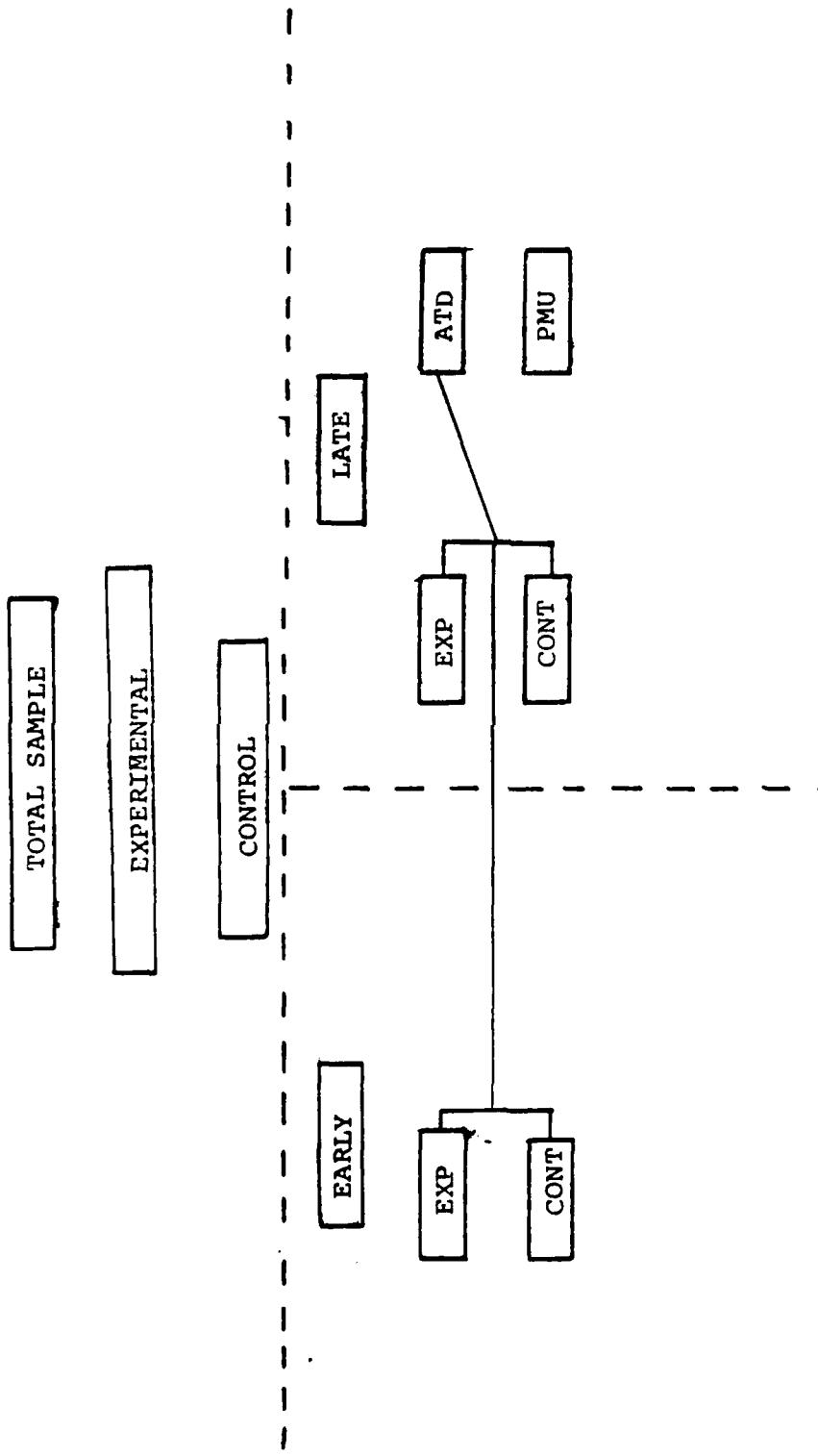


FIGURE F-1. Experimental Design Analysis:
ATD Early vs. Late Groups

<u>Variable</u>	<u>Early</u>	<u>Late</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_L</u>
HYEC	11.63	11.47	.3435	242	230
PERC	45.33	48.22	.2884	239	228
AGEE	18.81	18.65	.3234	242	230
Single/Married	231/11	224/6	.0896	242	230
NDEP/DEP	229/13	222/8	.2876	242	230
Regular/Reserve	177/65	158/72	.2876	242	230
White/Nonwhite	170/71	163/67	.9943	242	230

TABLE F-1
MEANS AND DISTRIBUTIONS FOR ATD PERSONNEL:
EARLY VS. LATE

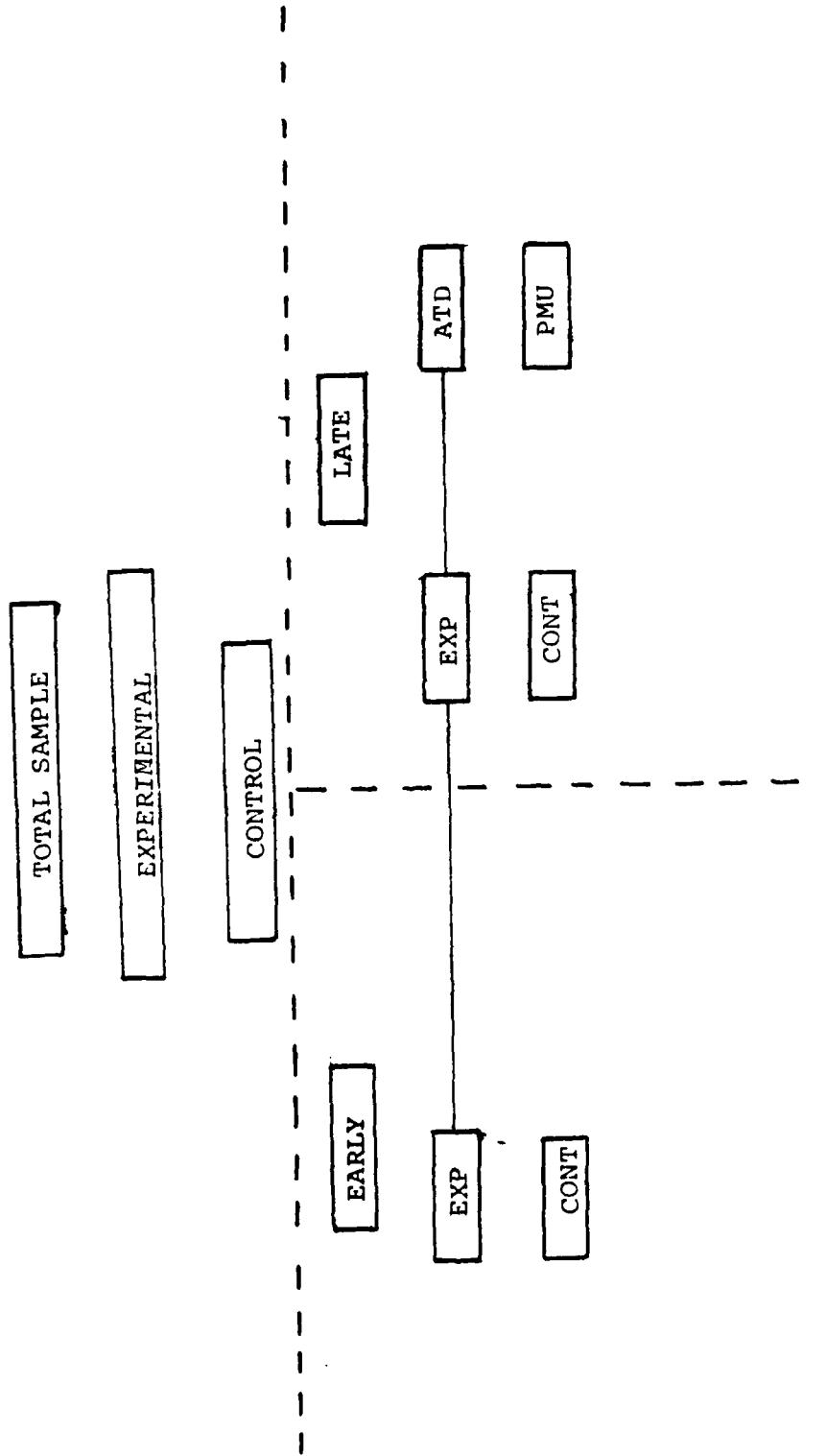


FIGURE F-2. Experimental Design Analysis:
ATD Early vs. ATD Late Experimental Groups

<u>Variable</u>	<u>Early</u>	<u>Late</u>	<u>χ^2 Probability</u>	<u>N_E</u>	<u>N_L</u>
HYEC	11.626	11.547	.7227	123	115
PERC	44.13	46.51	.2904	121	114
AGEE	18.97	18.652	.9538	123	115
Single/Married	117/6	111/4	.5907	123	115
NDEP/DEP	117/6	110/5	.9198	123	115
Regular/Reserve	93/31	80/35	.3676	123	115
White/Nonwhite	85/38	88/27	.1481	123	115

TABLE F-II
MEANS AND DISTRIBUTIONS FOR ATD EXPERIMENTALS: EARLY VS. LATE

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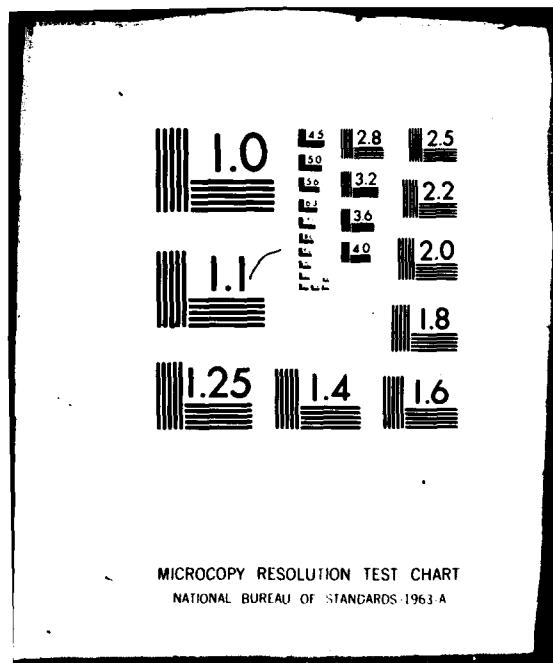
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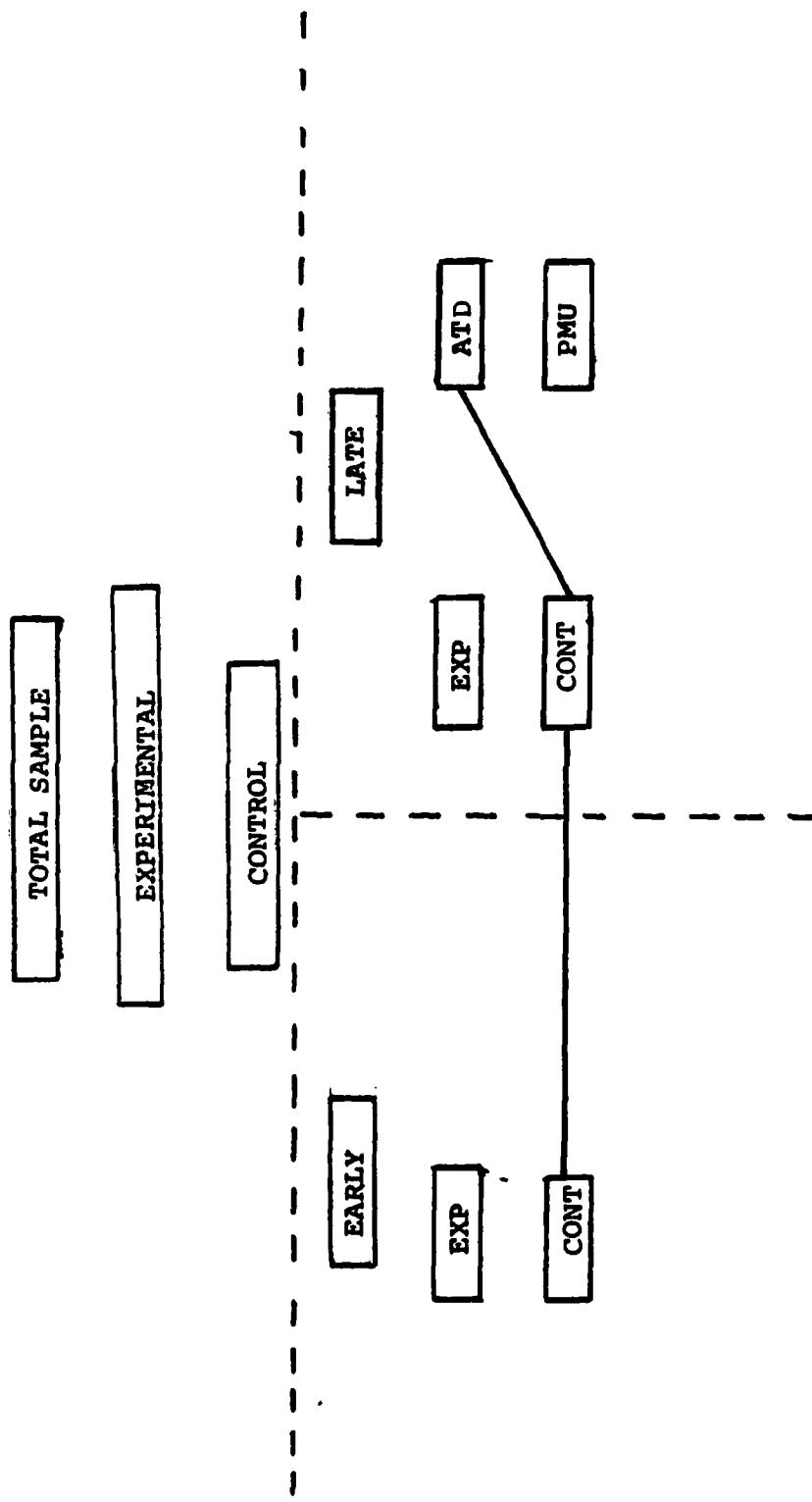


FIGURE F-3. Experimental Design Analysis:
ATD Early vs. Late Control Groups

<u>Variable</u>	<u>Early</u>	<u>Late</u>	<u>x^2 Probability</u>	<u>N_E</u>	<u>N_L</u>
HYEC	11.638	11.383	.3780	119	115
PERC	46.57	49.93	.2635	118	114
AGEE	18.655	18.29	.0442*	119	115
Single/Married	114/5	113/2	.2689	119	115
NDEP/DEP	112/7	112/3	.7807	119	115
Regular/Reserve	85/34	78/37	.5490	119	115
White/Nonwhite	85/33	75/40	.1484	118	115

*Significant at $\leq .05$ level.

TABLE F-III
MEANS AND DISTRIBUTIONS FOR ATD CONTROLS: EARLY VS. LATE

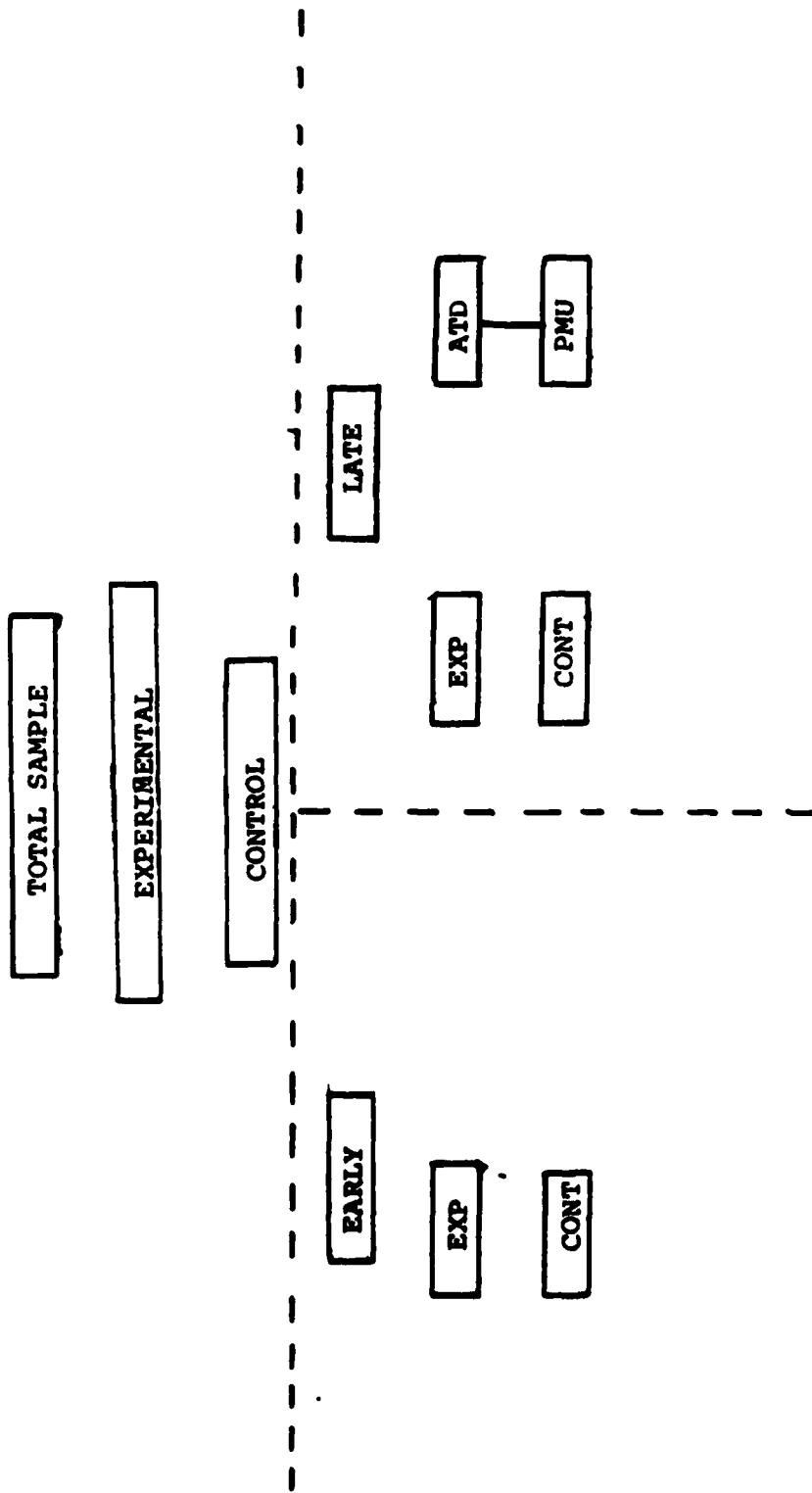


FIGURE F-4. Experimental Design Analysis:
Late ATD vs. PMU Groups

<u>Variable</u>	<u>ATD</u>	<u>PMU</u>	<u>χ^2 Probability</u>	<u>N_{ATD}</u>	<u>N_{PMU}</u>
HYEC	11.46	10.0	.0005*	230	52
PERC	48.23	54.28	.3811	228	52
AGEE	18.65	19.08	.1067	230	52
Single/Married	224/6	52/0	.2391	230	52
NDEP/DEP	222/8	51/1	.7439	230	52
Regular/Reserve	158/72	35/17	.8458	230	52
White/Nonwhite	163/67	36/16	.6624	230	52

*Significant at $\leq .05$ level.

TABLE F-IV
MEANS AND DISTRIBUTIONS FOR LATE PERSONNEL: ATD VS. PMU

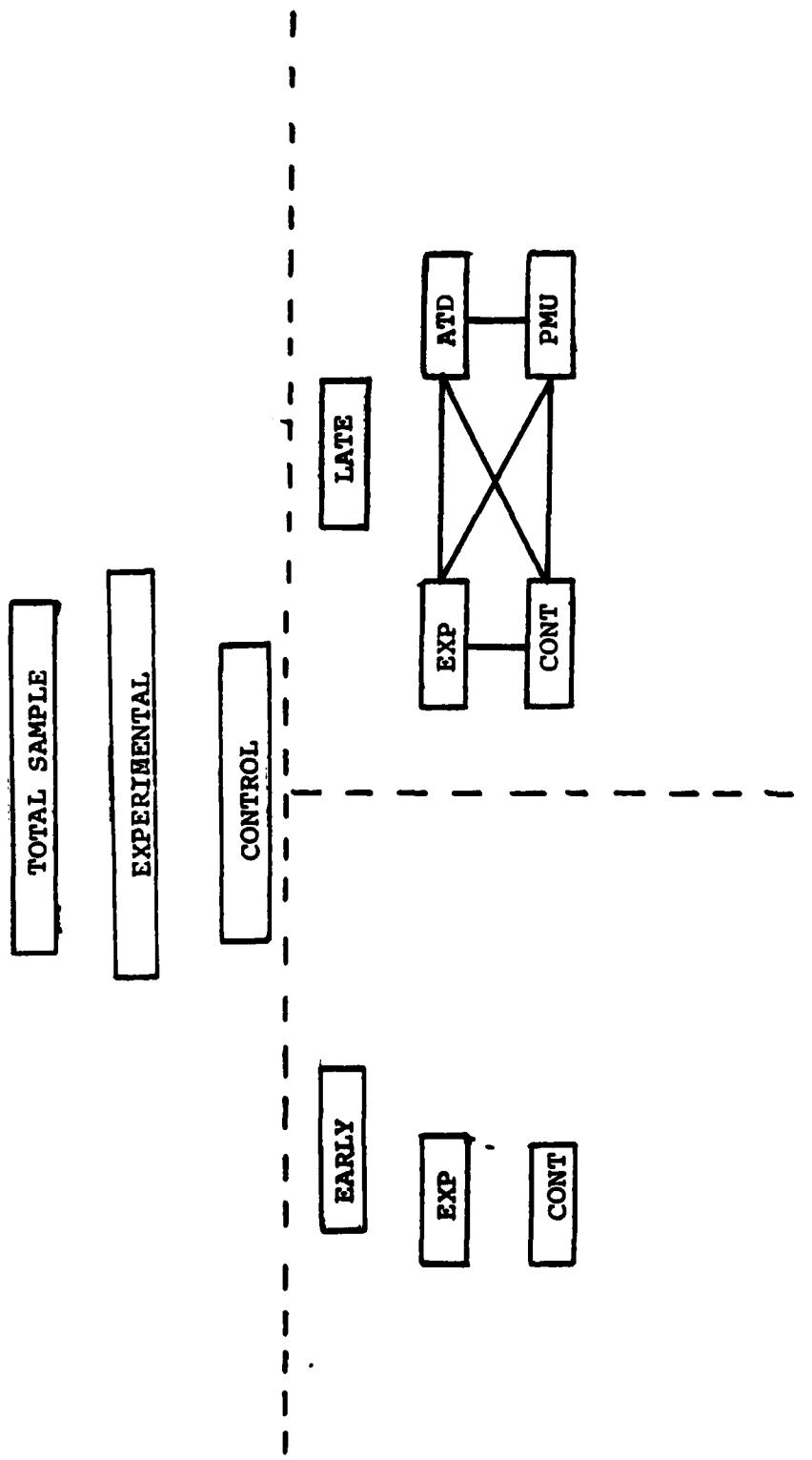


FIGURE F-5. ATD Experimental/Control vs.
PMU Experimental/Control Groups

<u>Variable</u>	<u>ATD EXP</u>	<u>PMU EXP</u>	<u>ATD CONT</u>	<u>PMU CONT</u>	<u>χ^2 Probability</u>
HYEC	11.547	11.24	11.383	10.592	.0013*
PERC	46.51	50.39	49.93	57.59	.3371
AGEE	18.652	18.72	18.643	19.41	.4412
Single/Married	111/4	25/0	113/2	27/0	.5278
NDEP/DEP	110/5	25/0	112/3	26/1	.7022
Regular/Reserve	80/35	16/9	70/37	19/8	.9479
White/Nonwhite	<u>88/27</u>	<u>16/9</u>	<u>75/40</u>	<u>20/7</u>	.2588
N =	115	25	115	27	

*Significant at $\leq .05$ level.

TABLE F-V
MEANS AND DISTRIBUTIONS FOR LATE PERSONNEL: ATD/PMU BY EXPERIMENTAL/CONTROL

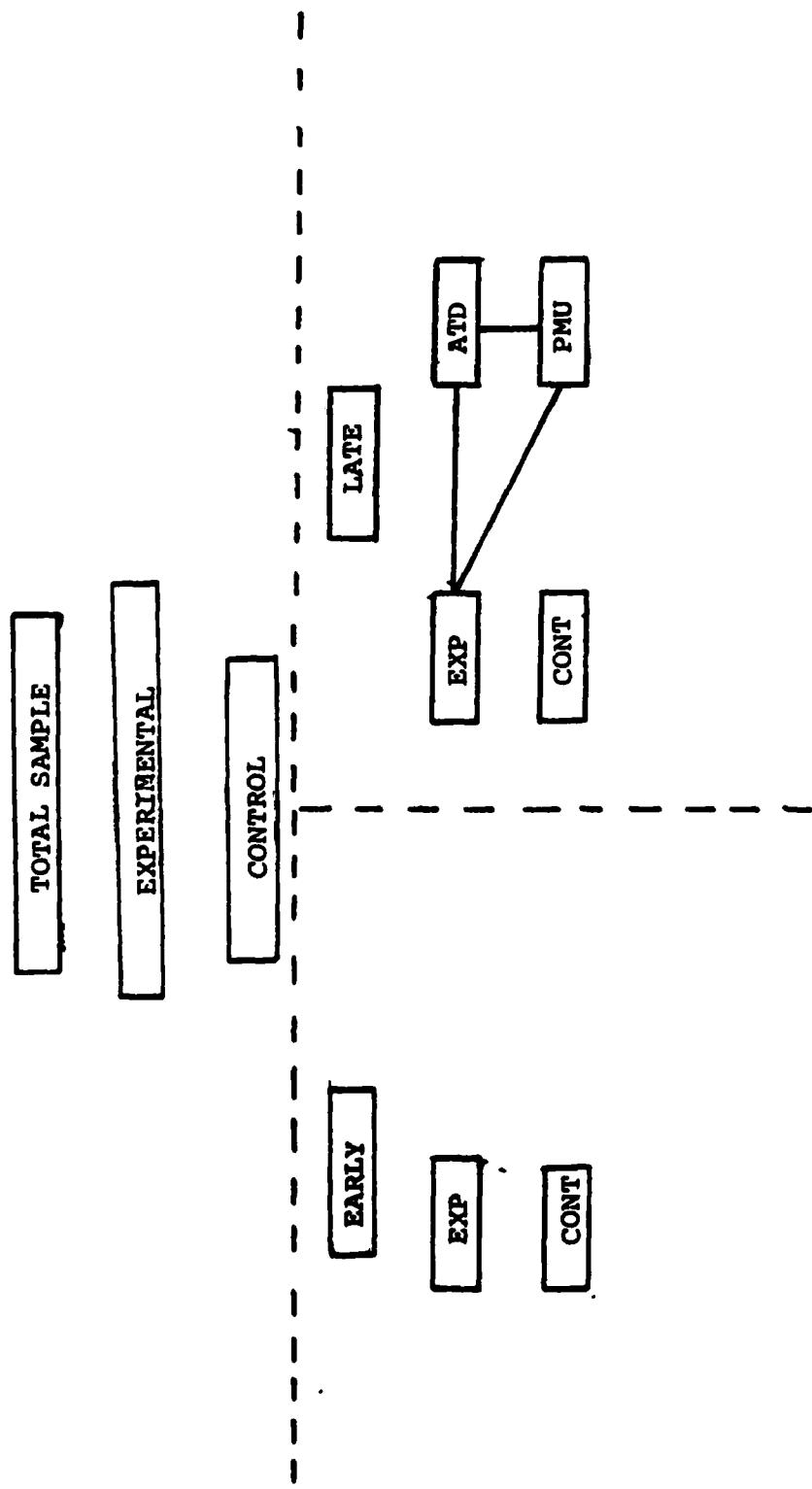


FIGURE F-6. Experimental Design Analysis:
Late ATD Experimental vs. PMU Experimental Groups

<u>Variable</u>	<u>ATD</u>	<u>PMU</u>	<u>x^* Probability</u>	<u>N_{ATD}</u>	<u>N_{PMU}</u>
HYEC	11.547	11.24	.3671	115	25
PERC	46.51	50.39	.5534	114	23
AGEE	18.652	18.72	.5789	115	25
Single/Married	111/4	25/0	.7765	115	25
NDEP/DEP	110/5	25/0	.5551	115	25
Regular/Reserve	80/5	16/9	.7599	115	25
White/Nonwhite	88/27	16/9	.2956	115	25

TABLE F-VI
MEANS AND DISTRIBUTIONS FOR LATE EXPERIMENTALS: ATD VS. PMU

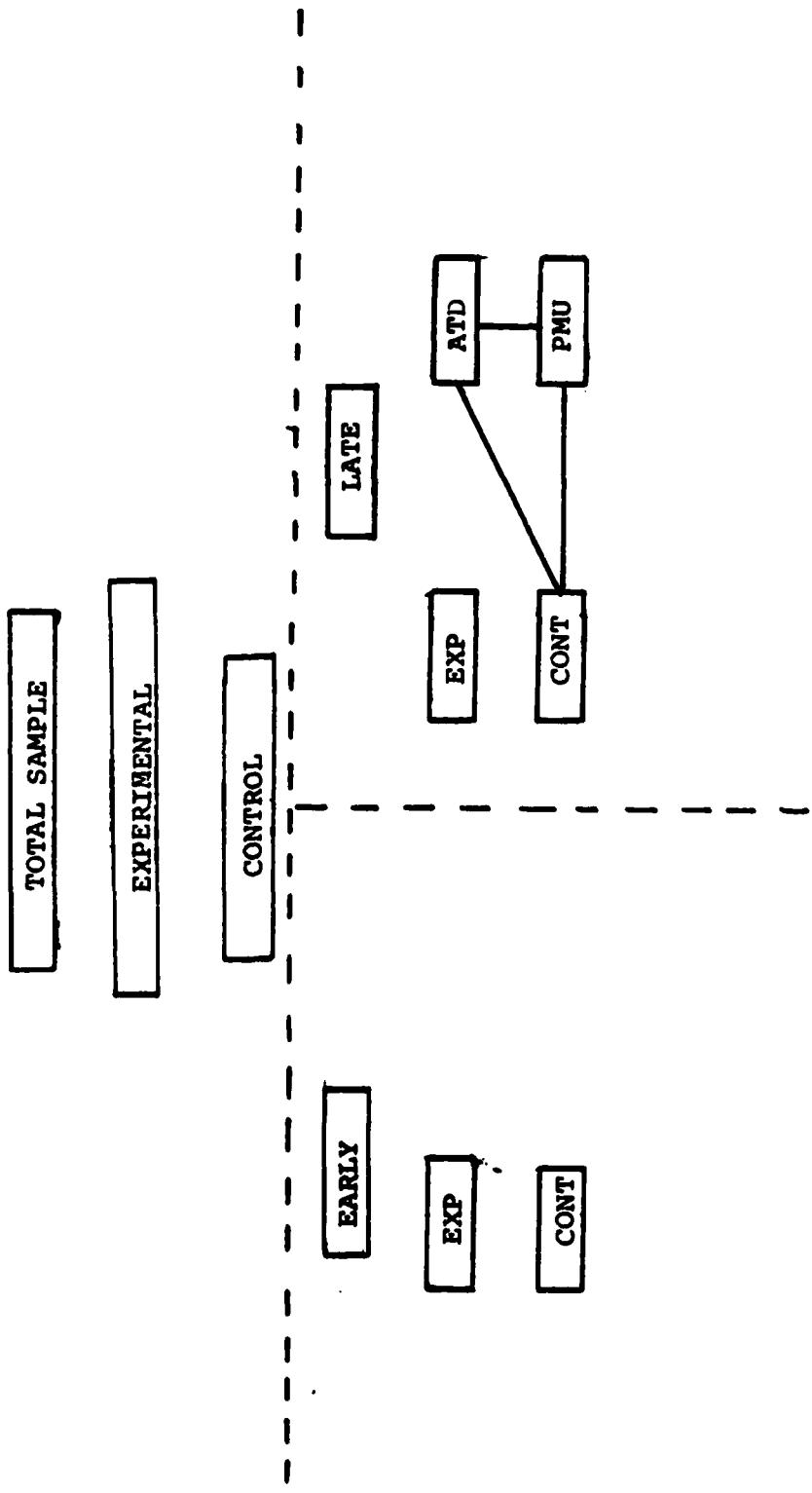


FIGURE F-7. Experimental Design Analysis:
Late ATD Control vs. PMU Control Groups

<u>Variable</u>	<u>ATD</u>	<u>PMU</u>	<u>χ^2 Probability</u>	<u>N_{ATD}</u>	<u>N_{PMU}</u>
HYEC	11.383	10.592	.00014*	115	27
PERC	49.93	57.59	.5042	114	23
AGEE	18.643	19.41	.1584	115	27
Single/Married	113/2	27/0	.4901	115	27
NDEP/DEP	112/3	26/1	.7887	115	27
Regular/Reserve	78/37	19/8	.7982	115	27
White/Nonwhite	75/40	20/7	.5390	115	27

* Significant at $\leq .05$ level.

TABLE F-VII
MEANS AND DISTRIBUTIONS FOR LATE CONTROLS: ATD VS. PMU

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